Linus Pauling Protocol For Heart Disease.
Linus Pauling Therapy For Heart Disease.
Linus Pauling Protocol / Dr Matthias Rath / Pauling-Rath Lysine - Dr. Linus Pauling Heart Protocol , Lysine Dosage, w Dr Matthias Rath .

Linus Pauling (Nobel Laureate)’s Transcribed Lecture in 1993 on Vitamin C and Lysine, Proline.

This lecture was given in Stanford Medical School in California, USA, in 1993, when Linus Pauling was 92 years old. Linus Pauling and Dr Matthias Rath were the inventor Linus Pauling Protocol for Heart Disease.

that it should be possible to get the

nearly complete control of

cardiovascular disease two and a half

years ago

I was in a meeting of the National

Academy of Sciences in the United States

there was a little celebration there of

my 90th birthday and the 58th

anniversary of my membership in the

National Academy of Sciences USA

I was in the hallway of the academy

building and another member of the

academy came up to me

he said

Dr Pauling

I

have

heart disease

my brother and my father both died of

heart attacks I am a biochemist but I

was retired from the National Institutes

of Health several years ago for

disability because of my heart I’ve had

three bypass operations my saphenous

veins have been used up so I can’t have

any more bypass operations I like to

walk

but

I have trouble because after I walked a

little way or I developed the in China

pictures

pain in my heart if I take a micro

glycerin tablet I can walk a little

farther and then I may have to take

another nitroglycerin tablet

he went on to say

I’ve been taking vitamin C

six grams a day or five five grams a day

for several years because of your

recommendation

um is there something else that I could

do

that would permit me to walk

so I said well

I can make a suggestion

never been tried before

take lysine the amino acid lysine well I

didn’t need to tell him what lysine was

and that some essential amino acid and

you have to get around the gram a day to

be in good health and you get in your

foods

because he he’s one of the most

distinguished biochemists in the United

States recipients of the national medal

of Science in the United States

so he said how much shall I take

I thought

here

what do I know I know that people get a

grammar too in their food depending upon

how much meat and fish they eat and that

it’s essential they have together around

one gram

uh it hasn’t been in known toxicity in

animals or human beings

so I’ll make a guess I said five grams

five grams a day

so he thanked me

a couple of months later he telephone me

and said it’s almost miraculous I

started taking a gram a day and then two

grams and so on within a month after I

had reached five grams a day of Lysine

in addition to my five grams of vitamin

C

uh I can walk

two miles without any nitroglycerin

tablets or without any pain in the chest

he said he had cut down the amount of

heart medicine he was taking him half

it’s almost miraculous he said

so

another couple of months went by and he

telephoned me and said

I was feeling so good the other day that

I cut down a big tree in our yard and

was chopping it up for wood and I was

also painting their house and I got

chest pains

despite his five grams of Lysine and the

vitamins so he said so I went up to six

grams a day of Lysine and six grams of

vitamin C and now I’m continuing

chopping down the chopping up the tree

and painting the house and now a couple

of years later he’s still in fine health

and

so I published this case history

and the

another heart patient wrote to me well I

have to go into detail about her

[Music]

she suffered from stress

and China

she had a television show and if she

were under stress and connection with

the television show she had to take an

electric glycerin tablets if she climbed

a flight of stairs her chest would hurt

and she had to take she was taking six

or seven

nitroglycerin tablets a day for several

years

also she was taking vitamin C

and she said when she read the article

about the first patient she started on

lysine

she has PhD in chemistry and was the

professor of chemistry in the New

Brunswick University of New Brunswick in

Fredericton New Brunswick Canada

and she said

within three weeks after she had reached

three grams of Lysine per day she was

able to go all day despite stressful

occurrences without taking an initial

glycerin

and that she was setting off with her

husband on a three-month trip around the world she’s 67 years old 68 years old

now

so that account was published and

also another patient so that I sent go

into detail about who the patient who

had had

two extensive bypass operations and was

told that he was in bad shape with his

arteries clogged to the coronary artery

clogged them

that he was not a candidate for another

bypass operation or for another

angioplasty

he was living in the same town as the

first patient and friends told him about

the first patient so he went to see him

and he said it’s almost miraculous

within a month after he had reached five

grams of Lysine per day he was writing

him to town from his house somewhat out

in the country several times a week on

his bicycle a Nine Mile round trip

and was feeling fine no longer just

waiting around for his impending demise

as the

Physicians had recommended

him to do

well

I don’t know that there’s need for a

randomized prospective double-blind

control trial when you get to evidence

it was this sort about the value of

large intakes of vitamin C and also of

Lysine for preventing the deposition of

atherosclerotic plaques and preventing

death from cardiovascular

disease

I recommend

I recommend that every person every

adult takes three grams of vitamin C per

day

and smaller amounts for children

proportional to body weight

that

every person who is at risk for one

reason or another from heart disease a

take perhaps not only the vitamin C five

or six grams of vitamin C per day but

also uh

two grams or more of Lysine per day two

grams May well be

effective prophylactically for people

who have not had heart attacks but

larger amounts might be needed for

people who are at greater risk

for cardiovascular disease

so I believe that it should be possible

at any rate in the developed countries

who are prosperous enough to be able to

afford the rather small amounts of money

needed for the vitamin C and the lysine

to get

a large amount of prophylactic action

against cardiovascular disease and

against other diseases also and an

increase in the lengths of

life the length of the period of really

good health of well-being

so I am very optimistic about the future

so far as cardiovascular disease course

thank you of course

thank you I hope you’ve been impressed

by the logic of this new approach to the

treatment and prevention of

cardiovascular disease it involves the

addition of vitamin C and lysine

supplements

the lysine prevents lipoprotein a from

sticking to the walls of the arteries

and vitamin C helps to lower circulating

levels of lipoprotein a

Dr Pauling recommends three grams of

vitamin C and one gram of Lysine per day as a general preventative dose

and for those with cardiovascular

problems he recommends six grams of

vitamin C and three grams of Lysine

both are natural constituents of food

neither are unsafe even at doses

considerably higher than these levels

if you do however have cardiovascular

disease we recommend you carry out this

advice under the guidance of your

physician

together with a well-balanced diet and

supplement program high in other

antioxidant nutrients such as Vitamin E

and vitamin A you’ve just heard the lay

you’ve just

[Music]

good afternoon welcome to the show

this is a technology hour and I’m your

host Ren

we’ve got a great show planned for you

today I’m here with Owen bonaro and

we’re going to be discussing some

fabulous breakthrough information for

folks that might be suffering from all

kinds of things but one any type of

heart disease welcome to the show thank

you thank you for having me yeah oh I'm

so excited to share this information

with our listening audience because uh

we just don't get to hear about this too

much and I know soon enough it'll be in

a lot of uh you know magazines and so

forth and uh I know you've been doing

radio shows here right and television

shows recently

um yeah I can't explain that and maybe

after listening people could try to uh

maybe they'll have some ideas on their

own because this is really not a new

idea

um the idea that there is a the cause of

vitamin of heart disease might have more

to do with vitamin C than any other

single Factor

and that's what I'll be trying to talk

about today

okay and it's interesting how you became

involved in this uh because you are the

CEO and co-founder of the direct as the

Director of the vitamin C Foundation

which is the Linus paulings

um well what we try to do is yeah we

tried to take up when uh line is falling

passed away

the function that he he was monitoring

all the science on vitamin C and if

there was any maybe false or

questionable information he’d get you

know get right on him that’s what we try

to do because there seems to be every

once in a while there’ll be

misinformation in the media about

vitamin C and so we check on it try to

keep the the most up-to-date valid

information our website

vitamincfoundation.org

well you know what that occurs to me

it’s quite likely since more and more

people are

um seeking out information that maybe

the vitamin C in this whole idea of

looking at heart disease from a

different point of view because so many

people trusted drugs in the past and now

we find that there’s this you know all

times the vitamin C that is important

for uh getting rid of the C-reactive

protein as a chlamydia that we’ve got

the tests on homocysteine now all can

determine

you know really if we’re in a heart

disease process that’s right and it does

I don’t want to feel any Thunder from Dr

Thomas Levy who’s written a terrific

book called vitamin C infectious

diseases and toxins

but he had he was a he’s a cardiologist

and he analyzed 27 known cardiovascular

risk factors and reduce them all to a

single Factor

low vitamin C and he’s actually working

on a book that’s going to connect

vitamin C and heart disease and I think

at that point uh as good a writer as he

is that that may have the kind of impact

that we’ve been waiting for for about a

decade now

well we really have because you’re

you’re right about this there is a

tremendous amount of misinformation and

just even 20 years ago when folks were

going in and having chelation treatments

and I’m sure any of our listeners out

there who have had it uh probably had

for the most part a good experience from

it

um but you know from the uh from the

peer reviews you know they’re the first

to say no no no it doesn’t work EDTA

vitamin C magnesium drip they just don’t

work I could go into in fact toward the

end maybe we’ll we can go into some of

the latest studies on that that have a

lot to say about that well go let’s give

us a little uh Insight on the history

and how you became involved okay and um

well how I became involved I’ve been

interested I became interested when I

was falling about 1983 and 1986. and it

changed my own life when I started

taking vitamin C first at three grams

and now I’m up to 18 000 milligrams a

day like Pauline did

and because it had such a positive

impact in my health and the medical

profession was at best ignoring it or at

worst ridiculing it it I became

interested I was not in the medical

profession at that time

and

um we actually discovered a video in

1994 of Pauling I think he filmed it in

1992. and it’s a one-hour video on heart

disease

and what was amazing to me at the time

was he was saying that he thought heart

disease could be controlled even cured

and here’s one of the greatest

intellects of the 20th century

saying these things on video anybody can

you know purchase a video or go to the

library and rent it and see it and we

thought so we obtained the rights to uh

to Market distribute that video thinking

that people with heart disease might

want to know this information

and that was sort of what led me into

this whole world of of how there could

be a

a cure whether it works or not a cure

made by somebody of that stature and

completely the media is completely

silent about it it was just amazing to

me that that could happen and as I got

into looking at uh his theory and

researching it it turns out that the

original ideas that there was a

connection between vitamin C and heart

disease actually arose not long after

vitamin C itself was discovered in the

1930s someone in the 1940s the war got

in the way but then in the 1950s a

Canadian Dr Willis made probably the

most crucial experiments and he was able to show well first of all he he was

noticing in his patients he was a

regular MD that the what we call

atherosclerosis at that time or even

still the white plaque that built up in

his patients and the arteries they it

builds up in the same places

time after time in different patients it

wasn’t randomly distributed throughout

the body and these places where he saw

was building up was places where he

would actually compute it that the blood

pressure was highest near the near the

heart where the arteries divide

and he became to think well maybe

there’s a mechanical or a stress due to

the blood pressure and the heartbeat

that’s causing atherosclerosis and at

that time they were very well aware that

that vitamin C had a lot to do with the

strength of your arteries and he he

decided to test the idea that vitamin C

had something to do

with heart disease and in in guinea pigs

he was able to show because guinea pigs

are one of the few animals

um besides humans that don’t make their

own vitamin C

cats dogs all 99 of species all make

their own vitamin C in very very large

amounts in their liver we have to get it

by mouth like the guinea pig

and then we lose some during digestion

so he studied these guinea pigs and in

the amounts that he gave what we call

uh

a very low amount of kept deprived of

vitamin C all the guinea pigs got

atherosclerosis in the amount that he

gave adjusted for body weight about

three grams of vitamin C none of the

guinea pigs got ethosclerosis so one

single Factor depriving the guinea pig

of vitamin C created atherosclerosis and

these experiments were done in the 50s

he also then just looked at humans

terrific work in humans giving them 500

milligrams three times a day which I

know now is the pillow fairly well

amount

break right now

if you’ll just stay tuned folks audience

we’re going to be right back

[Music]

welcome back to the technology hour and

I’m Randy your host we’re talking today

with Doc with uh Owen sonaro he is the

founder and director of our vitamin C

foundation and we’re discussing uh

line of pauling’s research and we kind

of had it to take a break there so I’d

like for you to continue the discussion

well yeah well I was winding that up

basically just pointing out I want to

give credit to Dr Willis and the

Canadian doctors in the 1950s who had

almost had this answered and figured out

even though they for some reason I can’t

figure out were ignored after this other

than the fact that maybe just vitamin C

by itself did not reverse hard to do in

about a third of the patients it did

about the third were about the same and

and then in a small group about a third

had some Progressive plaque and that

wasn’t considered I guess uh Monumental

enough and then we can jump forward

really until about 1989 Dr Matthias

wrath was on a team in Germany looking

at the

post-mortem aortas the thick artery that

leads into the heart and they discovered

that there was a substance called
lipoprotein small a that was the basic
component of plaque no LDL cholesterol
and this was what was forming the plaque
and Dr RAF got the idea that there was
also a connection with vitamin C
so he actually contacted Linus Pauling
went to his Institute and there they
both came up with the theory that I’d
like to talk about and that is at this
at the bottom level is that what we call
heart disease
is a form of scurvy now scurvy
um acute scurvy is what killed the
sailors a long time ago and we’ve got
the limeys the English taking limes to
cure scurvy and they discovered vitamin
C and that’s the acute form will kill in
two to three weeks if you don’t have any
vitamin C
but what what Matthias wrath and Linus
Pauling are saying is that what we call
heart disease or cardiovascular disease
is really a chronic a slow subclinical
form of scurvy wow and what they do what
they’re what they showed is that this
lipoprotein small a has evolved in
animals the few animals the guinea pig

and humans is a fruit bat and some high

order primates that don’t make vitamin C

in the liver and in those species they

produce this lipoprotein small a in

their liver and what happens is the end

result

is instead of having a leaky arterial

system

we have this plaque coating that acts

like a plaster cast for Our arteries so

it’s they think it’s an evolutionary

what they call a surrogate for vitamin C

if you have enough vitamin C you can

avoid the whole problem but if you don’t

then your lipoprotein a is going to form

these plaques and that’s their basic

Theory as a way in which we’ve evolved

lacking the vitamin C to stop our

vessels from leaking that’s it you’ve

got it right on the head and that’s

exactly it now what’s interesting and

what wrath has said and what I’ve been

able to confirm

um is that the kind of heart disease

that we suffer meaning human beings is

not generally suffered by any of the

animals in the animal kingdom and they

all make their own vitamin C and that’s

crucial to this Theory

so there’s two aspects of it one beings

that aren’t making vitamin C in their

liver and again they make in the amount

about three grams to 13 grams three

thousand to thirteen thousand milligrams

per day and that goes directly into the

bloodstream and one of the things

Pauline’s discovered on his on his own

research at his Institute was about half

of what we take in by mouth is lost

so to get let’s say what nine grams

that’s why he took 18. uh and I I’ll

just say the Thomas Levy recommends six

to twelve six thousand to twelve

thousand daily as a preventive

so given that um the the animals that

produce it don’t get cardiovascular

disease and if we talk about the

cardiovascular disease in humans it’s

not randomly distributed we don’t get it

in the fingers in the ears and the nose

and what have you whereas if there was a

poison circulating in the blood like a

cholesterol like a homocysteine you

would expect to get it randomly but

where we get it is again where the blood pressure is the highest near the heart

where the force of the heartbeat is

where that would create the leaking

vessels and then of course our body

makes uh you know comes to the rescue

with this lipo protein to support the

leak exactly so that’s that’s their

basic Theory and again like I said the

original people who kind of had the

right idea they didn’t know about

lipoprotein small a were back in the 50s

so uh Pauline and wrath and earlier and

they were able to show they’ve got three

United States patents for for basically

correcting uh and uh

treating cardiovascular disease formulas

to treat cardiovascular disease with the

com with vitamin C and lysine Proline

substances like that that it turns out

there’s something called a lysine

binding site that medicine has wowed and

what it binds to it doesn’t bind to your

artery if your artery’s healthy but if

your artery suffers what’s called a

lesion or sore a crack

then part of the collagen that’s holding

the body the the artery together starts

to stick out and there’s these are

called Lysol residues and this

lipoprotein Aid then sticks to it so

that’s how the healing happens you have

to have the lesion first

and then you then you’ll have well

um again knowing according to the video

that the lysine about the lysine binding

side he’s Pauling said that any physical

chemist would say it once well what you

want to do is increase the amount of

Lysine in your blood and so what we I

would never have thought of that I’m

gonna thank God he’s uh you know

two-time Nobel prize winning chemist and

people who have watched the video and

Reporting back to us

uh this is stretching back to 1995 it

had phenomenal results by taking very

large amounts of vitamin C and lysine

and Proline and the other substances

that that Pauline recommended in his

General writing such as Vitamin E

vitamin A carnitine and that type of

thing

but the the real crucial ones would be

the vitamin C to

strengthen produce the college and

needed to strengthen the arteries and

then the lysine the proline are what

they call lip lipoprotein small a

binding inhibitors

and that would be what the terminology

would be for the the cure for heart

disease if Pauline is right and I you

know I can look we've looked through the

literature I'll be able to cite later

the literature that supports it there

really is no literature that doesn't

support it because they're not studying

and it's being

now of course just for our audience it

might not really know the scope of Linus

pauling's work this is a lifetime of

work uh primarily uh probably over at

least what 30 40 years and uh his work

was uh primarily with vitamin C but he

is known

um as a molecular founding molecular

biology as the science of it and of

course

you know creating Ultra molecular

medicine right in fact you know we start

trying to list his accomplishments you

can't do it justice uh he was the

premier chemist of the 20th century

um he did invent the uh basically modern

chemistry and his book on the nature of

a chemical bond was what he won his

first Nobel Prize for 1954. what’s very

interesting is he probably was at

retirement age before he found or

learned about vitamin C his interest in

vitamin C happened in his 60s at that

point he became fascinated that both

first at vitamin B3 niacin because

um it was being given to schizophrenics

at very very high doses with no known

toxicity and it was fascinating to him

that you could give a substance at that

that had us that has such a powerful

effect that a small physical dose but

you could take an enormous dose with no

toxic side effect any found vitamin C

was the same way and he became

fascinated by it wow and he also was

being told then by Irwin stone that his

health he could live another 30 years

and so every There’s Hope for everybody

even if you’re in their 60s he didn’t

start taking vitamin C until his 60s and

he lived to be till 92. and thankfully I

think the vitamin C had a lot to do with the research he was able to do for those

30 years isn’t that fabulous yeah

primarily focused at Vitamin C so then

of course he ran into what you run into

when there are substances that cannot be

patented

that are not going to make a great deal

of money compared to prescription drugs

and you know how do those substances get

a fair Shake in the so-called scientific

journals when they may you know

interfere with an enormous amount of

profit that’s what what

uh he ran into and he wrote about and

I’ve I’ve seen it firsthand and those of

us you know I’m very appreciative to be

on the radio now it’s a very rare that

people whoever it’s listing it will get

information like this well that’s why

they do listen because I try to bring

out as many of these hidden more obscure

actual sounded bodies of information

that

um you know people need to know about so

we’re really happy to have you yeah you

know I said I’ve got a lot to talk about

the um one of the interesting things I

that sticks in my mind and we we put we

have we've run a website called Pauling

therapy.com

and this is to emphasize that the

invention of Pauling and wrath but we

think that Pauling had to do with the

dose more to do with the high dose being

recommended uh we think that's why he

did the videotape because

um it is it does take five to six grams

of vitamin C and lysine to get the kind

of results

so much of Lysine pardon me how much of

the lysine both both of them and again

this is on the video uh but at the first

time that it was tried he recommended

five and that worked for a while then

six grams of Lysine and five the

gentleman was taking five to six grams

of vitamin C so you're making this

available the video uh and we can order

this video right Pauling therapy if you

spell Linus Pauling it's

paulinetherapy.com

and that has all the information both on

this Theory how to get the video there's

some products out there that already

mixed uh you know because if you take a

pill it’s quite a few pills every day

and so some people so you have this

prepared already in a mix with

everything that’s right fabulous yeah

and what’s that called it’s heart

technology by time Laboratories that’s

that’s the one that uh that we’re

pushing I think there’s other ones out

there they’re all primarily about the

same you can you can get the basic

ingredients again the effect of having

not to take so many pills and having a

pre-mix if you’re trying to recommend it

to somebody not worried that maybe

they’re missing something right so it’s

a good idea to hit the formula but if I

may I want to talk about this one case

that I think is very very important and

up on this website paulinetherapy.com

you can click on the testimonials and

one of the uh there are lots of people

there and we almost didn’t put it up

because it’s easy for anybody to sit

down and write things but people started

to ask us and we had all these things

collecting so we decided to post them

and we tried to put their names and

numbers although putting people's names
and numbers on the Internet is
always not the wisest thing but so
people could call them and talk to these
people who have reversed their major
heart disease and one of them one of the
ones that really sticks in my mind is a
fellow named Jeff fettelson who was a
veteran
and he was getting his heart care
through the military through Veterans
for uh 10 years
and he had multiple heart attacks
multiple surgeries and you know he could
hardly walk he got to the point where he
was on his deathbed really I mean they
had his daughter and his son drove
overnight to be there and they thought
this time was it and again Cardiology
had 10 years to work on this fellow and
what he did and uh he he made it through
and he got home and he's sort of
computer literate he says you know
there's got to be some other way Annie
he just typed something in and he
actually got polytherapy we talked and
he started taking that day 14 grams of
vitamin C wow and six grams of Lysine

and then his story’s up there and
basically what he said in two days he
knew it was over I mean his car his
heart disease was over he didn’t you
know and he’s he’s doing he’s
terrifically well today we put a little
video of of what happened to him up
there but the reason this is important
is because a lot of other
people that we know might have tried
some other Alternatives they might have
tried chelation they might have tried uh
this this fella all he did was was under
the care Cardiology then he went
straight to this appalling therapy at a
really good dose uh right on right out
14 grams that’s hot well he went to 14
grams of vitamin C that is high and but
he went to six grams of Lysine and those
were the two and that was uh again he
told me in two days people didn’t
recognize him in two days in a week and
it just kept getting better and better
from there and I you know that brings up
another Point doctors are taught you
know that they’re prescribing toxic
substances

and therefore they are they are taught

to give the smallest amount that gets

the desired effect and if they can’t get

the effect and they up a little bit

because they know they could you know

cause some kind of damage

in these Ortho molecular what Pauline’s

talking about vitamin C lysine no known

toxic dose it’s it’s the way to think

about it is completely opposite you

should go up to the highest amounts that

you can take and then you back off until

the nuisance problems go away maybe

they’ll lose stools or whatever so it’s

a completely different Paradigm that

polling has brought to the world where

these orthomolecular substances if you

start way too low in fact that’s been

the problem with most of the science for

vitamin C and that Thomas Levy was able

to identify completely any study that

didn’t show value of vitamin C had very

very tiny amounts every study that has

had high amounts of vitamin C has shown

enormous benefit and so that’s that’s

really the key here is to to proper

dosing and these are in powder forms of

course

well for the product that I was

mentioning but I think people sounds

like we’re going yeah we’re going but

we’ll be right back and we’ll get to

talk about that product

[Music]

welcome back to the second portion of

this technology hour

we’re busy today with Owen Bonnaroo he’s

the co-founder and director of vitamin C

foundation and we’re discussing the

current science on uh or heart

technology and

um we’ve just been talking about uh

Linus pauling’s research and of course

discovery on heart disease

you were talking about uh the the

powdered form and right well uh we could

the uh the heart technology has tried to

incorporate uh I said the little story

behind the company is that uh the

founder had known Linus Pauling

personally had been up on the uh at the

Malibu Ranch

and when this work on life of protein

small a was being done and Pauling had

made a statement he said if these

experiments

um turn out as we think they might it

means it would mean that heart disease

could be eradicated and that stuck in

this entrepreneur’s brain and of course

the the experiments did pan out they

this were with guinea pigs and I did

find that the protein they elevated in

the guinea pigs that were deprived of

vitamin C

and so he tried to be faithful to

Pauling and and uh went around looking

for other products that might be able to

give the amounts appalling was

recommending and there were none at that

time so he made the product for himself

and uh he wanted it to be to taste good

to be drink devoid the pills and then it

occurred to him if it was you know if if

other people might find it useful also

and it’s called the heart technology

from Power labs and it’s basically it

provides either three grams of Lysine

and vitamin C as a prophylactic or six

grams of each for therapeutic and some

people are even taking more as I

mentioned with uh with Mr fennelson

there he he took a lot more vitamin C

and he had a very rapid turnaround in a

10-year cardiovascular problem now this

uh

product that he took was it the heart

technology product uh he started

actually just taking vitamin C and

Lysine for and we put him on her he

ordered heart technology and he got that

uh within probably a week so he has been

taking heart technology from I’d say the

first week on

when you get the heart technology and

it’s uh I guess by a tablespoon or

teaspoon or whatever you measure

teaspoons in water so how much a vitamin

C is in just one teaspoon then well then

the serving is three thousand okay grams

so that’s a safe and then of course you

can go up from there it’s designed yeah

so that you can actually go to two to

three to be in the therapeutic range

okay but then maybe more times a day

right right and that’s you know people

people have to it turns out there is a

wide range in people’s tolerance for

vitamin C

um mine uh one of the reasons probably

I’m so enthused about this is I was able

to take the same 18 000 milligrams a day

and I have been since 1986 but Pauling

was taken other people uh might be you

know have trouble with 200 milligrams

they start to have trouble with it so

there is a wide range but most people it

turns out can take about uh from 4 000

without any problem a day sometimes and

uh oh and I know uh that the folks that

have suffered from hepatitis of course

this is

you could say a therapy that is been

known for a long time to of course begin

on the vitamin C crystals and work up to

eighteen thousand that’s your that’s the

target but right and of course go slowly

and go to the point where day by day you

increase to the point where there’s

diarrhea and then you back off and then

you kind of stabilize and then you can

continue to work up right

A lot of people that have liver

congestion that is a determining factor

of why they can’t tolerate more right

that that’s true and I I I don’t know

what the answer is for why there’s such

a range in the normal population but are you it might be worth taking a few

moments to talk about Dr cathcart’s

model tolerance finding okay and that

that finding was that people can’t you

know tolerate between four and and 16 to

18 grams a day and those people when

they’re well

that doesn’t change but when they become

ill under stress then their mild

tolerance can go up to 50 100 even 200

grams so 10 to almost 100 times more

vitamin C can be absorbed when they’re

when they’re ill or under some kind of a

disease condition under stress and then

when that disease condition goes away

they go back down to their normal

day-to-day bowel tolerance and what’s

very fascinating about that chart is

that you can use it and doctors should

be using it you can diagnose the

organism that’s attacking you because

you can look on his charge

of this chart the chart is at

orthomed.com

ortomed.com it’s the 19 well he first

published this in the 1980s it’s

titrating you look for his tight trading paper on the try trading yeah titrating

the trading the bowel tolerance and he

and there the chart is on that paper

it’s on the internet and what’s

fascinating about it you know I one time

I did have I was up to about 100 50

grams a day without any diarrhea I was

having something and I looked down there

and I thought it was really no viral

illnesses the only chance was it was a

bacterial and I went in got myself a

antibiotic and went right away so you

can use the chart to help differentiate

certain viruses from uh from bacteria

I’m sure the SARS thing probably is

enormous I know mononucleosis is 200

grams a day people who have

mononucleosis nucleosis can take 200 200

000 milligrams of Vitamin C without

getting diarrhea and the very effective

for a virus very virus and that’s Thomas

Levy’s whole thesis if you go back in

you can actually it takes IV doses but

it’s very very high doses it could

destroy viruses so that’s another aspect

of this that’s going to come into

fruition but if we can get back to heart

disease I don’t know how much time I

have I would like to mention this this study in the Journal of the American Medical Association because I’m sure some of your listeners out there are saying this is all well and good but what what is there any science for this is that is that possible for me to go ahead with hell sure sure we’re probably going to have a break here in just a minute okay well I’ll just stop talking when I hear them okay but there was uh I don’t uh by the way I’m a very strong promotional proponent for chelation therapy for removing the heavy metals I know of the anti-cancer effect and I I think it’s probably helpful for heart disease although I think the vitamin C is crucial and the the successful chelation therapies are also getting vitamin C but anyway I was talking to one of the Dr Waters in Wisconsin is one of the Pioneers in chelation therapy and he said did you hear about that Jama trial they gave vitamin C as the placebo and I I was shocked I you know that they would do something like that not thinking that it was spelled out in the

paper but it’s completely spelled out in
the paper they gave both groups and this
is uh it’s called acceleration therapy
for ischemic heart disease a randomized
controlled trial in the January 23rd 20
30th 2002 issue of Jama Knutson at all
and in there
um what they what they had is what the
Press of the story The reason they got
it published is they said there was no
value in EDTA over Placebo of what you
didn’t hear was that both groups
increased their these are heart patients
there was a placebo group and this this
EDTA group but both groups were given
five grams of vitamin C and 750
milligrams of magnesium IV and both
group increased their time 60 seconds on
the treadmill and they say in the study
that’s what we were looking for so it’s
not as if ebta didn’t work both you know
they didn’t have any increase in in
timed ischemia they both groups had it
and they gave both groups vitamin C and
so it really is a very interesting
confirmation of appalling therapy I went
back in the Medline looking to see if
there was anything else that could

provide these kind of uh that kind of

increase in the treadmill time and I did

find a testosterone patch was close but

there for instance the statin drugs I

talked to the author of the study did

not show any increase in time to ischemy

on a treadmill so and what we have

really is one of the first times we’ve

got something published only because it

seemed to debunk EDT chelation but it

showed that the group that these heart

patients getting vitamin C uh had a

significant measurable objective

Improvement in there on the treadmill

that’s wonderful we’ll be right back so

stay tuned

[Music]

foreign

we’re here with Owen bonaro of the

director of the vitamin C foundation and

we’ve been discussing the Linus hauling

tape that clearly spells out there is uh

certainly a reduction in heart disease

if not a cure

and uh so a recent study we find that in

fact there are people that have had

really severe heart disease and now are

free from that so you wanted to get into

a little something Uh Oh and about

um oh the vitamin K yeah calcium buildup

yeah I'll do that real quick one other

thing that's it's a little bit uh just

just email that I just got that I'd like

to share because this I subscribe to the

Townsend letter and and the people that

read that I have a few of my articles

have been published there and they

contact me and it turns out in the

United Kingdom they've run a study of

the Pauling therapy the first one and

it's from 1997 to 2000 so it's a two to

three year study and they gave six grams

of vitamin C six grams of Lysine 800

vitamin E and the bottom line was that

while the normal plaque growth was 15 to

30 percent in the placebo group The our

main they say our main important

observation was that black growth was

nearly halted to two to three percent

per year from 50 in the 30 in the vital

in the polytherapy group and there

that's about to be published the thing

that I wanted to mention about what I've

been you know in researching heart

disease uh we've been studying the

polling therapy and we have seen cases

where angiograms have shown that people

um have had reduction in in the plaque

but they still had high elevated blood

pressure and stiff arteries and that has

led me to a discovery of not only that

vitamin K has a role in regulating

calcium out of soft tissues and into

bones in fact in Japan

uh 45 milligrams which is a very high

amount of vitamin K is the one of the

treatments for osteoporosis but it turns

out the anticoagulant drugs that

cardiologists and will give to people

and they’re trying to you know this is

what’s in their toolbox and they’re

trying to prevent heart attack but the

drugs work by blocking vitamin K uptake

generally by the liver and this creates

a pseudo-henophilian people they can’t

clot as as fast but it turns out by

blocking by creating this vitamin K

deficiency it is increasing apparently

um the calcium buildup in soft tissue

arteries and heart valves so the same

drugs that people are taking

uh you know we’re thinking it’s going to

help them in one way is apparently
having a problem another way and I’m by
sending the blood right yeah they’re
trying to defend the blood and they’re
doing it by blocking vitamin K but what
but the but by doing that it’s causing
buildup of calcium in fact I’m looking
now at one of the Medline articles about
weraffin which is one of these drugs
causes rapid calcification and the
elastic well uh tissue in Rat arteries
and heart valves and they say aortic
calcification was first seen after two
weeks of where if and treatment and
progressed increasingly in density at
three four and five weeks by five weeks
the highly focal calcification of major
major arteries could be seen on
radiographs and visual inspection of the
artery and so in the animal studies uh
these thinners cause this calcium
buildup and I know one gentleman we’re
going to write this up uh who had very
high stiffnesses and arterial stiffness
index and he was you know he’s on the
Pauling therapy uh in his 70s and we
learned about this connection with
vitamin K and the only thing he changed

the number was where uh the normal

number of 60 his number was 250 for the

stiffness he just changed he just

started taking vitamin K

and I think it was six to nine months

later he had the same test redone and he

was down to 60 which is what mine is on

this art technology so simply by taking

vitamin K it seemed to have made his

arteries much more elastic left stiff

now we’re not high doses do you know

pardon me were these high doses of

vitamin K oh actually he was taking a

fairly low dose I think probably picking

a tenth of a milligram I thought he was

taking 10 milligrams and that’s uh but

he was he was taking a fairly small dose

the um

the we’re I think we don’t really know

yet what the optimum doses I know Dr

Levy is actually researching this being

a cardiologist he’s very interested he’s

got people because Vitamin K is for clot

so that you well it turns out you

require vitamin K to have correct

clotting that doesn’t mean your blood is

thicker when you have that it just what

they’re doing is creating a pseudohemophilia right blocking one of it but just by taking more it’s like taking more vitamin C doesn’t cause you collagen to grow sure you know I mean more than it’s it’s the same idea but Vitamin K is involved in so many things in addition to this that it really is a shame that the people don’t know the fact that the bike this is not probably the optimum way to prevent heart attacks in fact if you want to prevent a heart attack according to circulation American Heart Association as an Oxford team looked at 27 major studies and they focused on lipoprotein small a this lipoprotein small a they’re pulling and wrath identified and they said if you have elevated lipoproteins small a your chance of a heart attack is 70 percent greater than those who had normal or under and the number really doesn’t matter nobody’s going to remember it but the point is that lipoprotein small a seems to have a lot more to do with whether you’re going to have a heart attack than some of the other things that we’ve been looking at over the over time so I wanted to get that out

um I thank you for the opportunity to

let people know they can you know we do

have something called another website

called bowlingreport.com that gets

updated every day where we have lots of

links on the second page to all these

studies in Medline what have you on on

uh you know a different look let’s say

at medicines okay so that is an

important site also so you’ve got your

site for people to get more information

to order this uh tape from

polytherapy.com is the one for the video

and appalling therapy and how is bowling

at the way it sounds it’s a b as in boy

o l e n

report.com Tim Bolin is a is a

phenomenal person who is who is going

after these so-called quack Busters who

are out there protecting regular

Medicine by calling anybody who says

anything you know that they don’t agree

with the quack right and so Tim has has

made a name um going after them in court

and this is his his newsletter and so

people it’s the only place you’re going

to be able to read about this because

everybody else is afraid to talk again

conclusion of the technology hour I’m

your host Ren and we’ve been visiting

today with Owen and Bonnaroo he is the

co-founder and director of the vitamin C

foundation and has given us a website

that we can contact him for the Linus

Pauling video which describes the cure

for heart disease is that right

I believe so all right and then what

what uh we can call that or look at that

number is there a number so we’re just

pollingpauling therapy.com should get

you everywhere else we go uh that points

to all the other websites we’ve been

talking about the vitamin C Foundation

the bowling

reporting therapy.com I think is the uh

is the one to start at okay

pollingtherapy.com right

um I don’t know how much more time we

have the only other thing I’d like to

mention is we’ve been seeing more people

recently getting cataracts and it is

known that if you’re taking a Statin

drug and have an antibiotic the

pharmacist should be warning you to stop the Statin uh I don’t know if you’re

aware of that and there’s I’m trying to

find the website during the break here

I’m not going to be able to do it

probably in the time we have but the on

the second page of the bowling reports

you could well we know that Cal the

cataracts are as a result of calcium

thrown out of solution so it’s it’s a

hardening actually once again and also

might attribute to macular degeneration

because of lack of blood flowing

right

um that’s right there was a there’s a

team and I was going to um

you know there might be able to get to

it now they basically said that for

people on statins typically 10 days

doubles the risk of cataracts and two or

more courses triples the risk and what

drug is this Army what

um and as Dr Richard sandelia and it’s

that uh well I can go and get to it from

the second page of the bowling report it

uh

but what what he had said is he was

taking the anti-bye antibiotic

e-r-t-h-y-etherium myosin in combination

with the popular static clustering drugs

uh may increase the risk of cataracts

and he’s he’s uh had this up and he’s

done some press releases and I was just

pointing out that we get people calling

here in the you know their 850s pretty

young who are getting cataracts and

finding out that they are on these

cholesterol drugs and they did take a

course of antibiotics and the pharmacist

didn’t tell them to stop the statins

while they’re on the antibiotics so I

was just hoping to get that little

that’s fabulous well erythromycin is

taken for skin for acne I mean it’s a

common one yeah so you just got to be

careful I don’t know I’m sure you’ve

talked before about the fact that the

same mechanism the lowest cholesterol

also blocks production coenzyme Q10 and

some of these drugs are also because

they’re especially as their dosages are

increasing doctors are more comfortable

getting higher doses they’re causing

cardiomyopathy heart failure an epidemic

of heart failure that can be traced back

to the statin drugs so it’s just good

for people to keep their their eyes open

and

and do their own reading and research

and try to make sense of of this out

there there’s so much money to be made

in drugs it’s sometimes hard to get the

the science is there yeah and the

following report is one that you can

just take a quick glance at and see

what’s new that’s exactly right it

changes every day and if there’s

anything important it’ll be right at the

headline at the top okay as it changes

so that’s the bolandreport.com that’s

correct

excellent is there a number someone can

call to talk with you or to order yeah

I’ll give you hopefully I have this

memorized it’s 800

894-9025-800-894-9025 and they can ask

about the Linus Pauling video we can

talk to about the heart technology uh

nutritional drink mix uh and I could

talk about any of the subjects that

we’ve been talking about today I do that

a lot excellent well that’s wonderful

okay

um we probably have another couple of

minutes here okay

um well we can uh we can we can go to

almost any direction that you’d want to

go I well I like this vitamin K stuff

because actually we might be just about

out of it we’re gonna have to have you

back on because

thank you for giving me this opportunity

thank you okay we’ll talk with you next

week and uh thank you guests for

spending your Saturday here with us

[Music]

okay we’re back uh

question here we discussed the liver and

it’s the way it manufactures the uh

um this glutathioning which is really

important as a uh helps with this um

this healing process that uh goes on

with the LPA could you describe that

uh or the the glucose portion for the

liver at the liver when it’s congested

there’s a certain uh process or pathway

that you mentioned last week and uh what

I with my understanding uh again is to

the particular three-step or four-step

pathway that the animals Kingdom turns

ordinary glucose ordinary sugar into the fourth step into vitamin C and that’s

the one that I’m most familiar with and

that we do have the ability but we’re

missing an enzyme looks like a

congenital or a defect that happened

maybe Pauline estimated three million

years ago and so our relatives seem to

have the same problem the guinea pig has

it and if it were not for that defect we

would be producing

vitamin C out of mostly out of the sugar

we eat and that’s unfortunately that’s

my limit to my knowledge of uh okay that

the liver my my fault and I thought we

were talking about uh free radicals and

and part of the way in which we make

these these uh the antioxidants yeah

yeah

um I don’t know how much time we have

here well only a couple more minutes so

well real quick let me just we’ll finish

with the heart technology and the score

z9 just to to one of the things that we

like about it besides the fact that it

comes in as a liquid so there’s no issue

of when the the pill might dissolve

there’s also no fillers all the pills

have to have something to hold it

together

and people don’t think about that too

much when we start taking 25 or 30 of

different kinds you can really be taking

a lot of fillers and who knows what

you’re getting so again this mix is uh

pure vitamin amino acid and Stevia taste

great and we’ve been having we’ve been

seeing uh really phenomenal anecdotal

results and we’re trying if I didn’t

mention it I should mention that we’re

we actually have a study before the

National Institute of Health this is the

second time the vitamin C Foundation has

applied for a grant to study it we have

over 200 people in Florida waiting to go

they turned us down the first time not

because they did anything wrong with our

study procedure but they didn’t like

these the Physicians that we got to run

the study and although when we went to

the normal universities they pretty much

left us left us away

and so we’ve done it we’ve resubmitted

again and we’re we’re hopefully all set

to go it hasn’t officially been turned

down yet but they haven’t uh we were

supposed to know by April and uh

hopefully you know we'll post that

obviously on that we have our study on

the vitamin C Foundation website our

proposal and if that were to come

through it would be the first time in

the United States that anybody has been

looking at this in a rigorous way is the

effect of uh the heart technology style

product on heart disease and lipoprotein

small a fabulous give out your phone

number 800-894-902594

what is it 800 894-9025

8948

-894-9025 that's correct

be happy to talk with anybody about what

we've uh what we've discovered

um of course we have the video from

Linus Pauling himself one hour including

the first three cases where high dose

lysine were given the first time and the

miraculous recoveries that were noted

back in 1992 and that we keep hearing

about Time After Time After Time the

hospital the cardiovascular awards are

filled with people who are told there's

no value in extra vitamin C I know of no one who’s taken 10 grams of vitamin C

more than five years who has any

evidence of cardiovascular disease and

neither does a life extension Foundation

which ran a study that it showed that

thank you so much Owen for being with us

thank you for inviting me

and yes absolutely and well several

fabulous ladies Mother’s Day uh God

bless you all and we’ll see you next

week

[Music]

and today I’ve asked Owen panaro of the

director of the vitamin C Foundation to

come back and share with us some more

information on a vitamin that we all

know we need to take vitamin C and

ascorbic acid it’s very vital in fact

essential for uh human beings yet it’s

uh we don’t store it too well and we

need it on an hourly basis so welcome to

the show and I’m happy to have you back

and there’s so much about this topic and

we’re going to be talking about hard

technology lysine and vitamin C right

off well thank you yes it’s great to be

back again and thanks for inviting me

can you hear me yes okay

um yeah I don’t want to repeat what we

spoke about before too much but we

probably should review just the basic

idea that there is

a complete unified theory that has been

developed from work that started in the

early early 50s into a theory that what

we call human cardiovascular disease

should really be called chronic scurvy

which means non-acute scurvy and it as

the uh human body uh

does not get the the kind of the amount

of vitamin C that the animals get if the

arteries tend to weaken

and what happens what could be almost

considered a healing process as

plaster-like casts form on the arteries

protecting them from leaking like like a

patch for the inside of your inner tube

on your on a bicycle exactly and what’s

interesting what we mentioned last week

was there’s two cornerstones to this

Theory one being that the animals which

make vitamin C in their bodies in very

very large amounts between six thousand

to thirteen thousand when adjusted for

body weight on a man on a daily basis do not get this kind of of build up the

plaque the uh the patch they don't have

they don't seem to need it and that

plaque we we disclosed we shared with

the audience was is actually there's a

name for it

and is that the lipoprotein small a is

that what we're lipoprotein small a

which is uh naturally occurring and it

it actually should be a friend not a foe

you know that that's right that's the

theory that in human beings and the few

very few species that haven't produced

their own vitamin C that this it's

really a form of cholesterol has he has

evolved to as a sir get four low vitamin

C and what's interesting and what

Pauline first brought to my attention

was that the animals that make their own

vitamin C don't have this particular

lipoprotein in their blood it's the

animals that have uh that don't make the

vitamin C and there's very few of us

that make this lipo small a protein

that's right that is there to patch a

potentially leaking artery that's

exactly right so there should be a

shutoff valve that says okay I've got

enough here I’m going to stop producing

that and of course that’s when we should

be supplied with some more vitamin C

that seems to be you know that seems to

be the direction that the research is

taking us into that area what what

falling and rafted I mean the first

experiments were done in the early 50s

that showed that vitamin C could could

stop basically prevent atherosclerosis

in the guinea pig which does not make

its own vitamin C and then they went off

into humans but they didn’t know about

lipoprotein small a in 1953. it looks

like from looking at the patents that

Pauline and wrath have that the first

people to identify lipoprotein small

they were in the 1960s although it

wasn’t not much of the work was done and

then in 19 about late 1980s is when they

discovered that it was lipoprotein a

that binds to the lysine binding site

and and as you said sticks forms the

patch and of course lysine is a major

Cornerstone to our collagen Matrix which

makes up all the ligaments and arteries

and actual or human flesh absolutely and what what the theory is just to get

right to it is that when the artery does

what they call a lesion but it could be

a crack or a sore

the the collagen that’s wrapped around

Our arteries providing a girder-like

structure

pieces of the lysine that do make up

that collagen start to stick up and

that’s what attracts the lipoprotein

small a to start forming the plaque it’s

called the lysine binding site there

wasn’t a Nobel Prize necessarily for

this finding but there it was the

finding that led to the the idea of the

lysine binding sites that was uh that

Pauling mentions in the video on all

this and so what happens is knowing that

lice that the these molecules stick to

these lysine the pieces of the collagen

as you mentioned the structure of the

collagen and sticks out during an injury

uh you can kind of see it as a hair that

is uh like a strand of hair that is what

we call a split end where the actual

Hornet layer is beginning to curl up

that’s right and this comes along and

attaches to it because it’s going to

smooth it down like and what what Paulie said and this was the his The Invention so what we we’ve the vitamin C Foundation what’s been known to the 1950s is that a deficiency in humans of vitamin C leads to the problem but to reverse it requires the amino acid lysine which like vitamin C there is no known toxic dose in other words you can give any amount to animals they talk about you know the lethal dose level LDL 50 that kills half the animals you cannot kill an animal with either vitamin C or lysine so you have two completely non-toxic substances one which is basically at the heart of the problem the other one which are one of our our Premier chemists says that any physical chemist would tell you that knowing about the way that this builds up that lice increasing the concentration of Lysine in the blood will tend to dissolve atherosclerotic plaques and that was his major contribution to this and both vitamin C and lysine are essential means that we don’t biologically transmutate it when we don’t have it somewhere to grab

that’s right we have to get it from a

diet that’s exactly correct in fact I

may have this number wrong but I think

you have to get at least two grams a day

to survive so in other words to stay in

nitrogen balance so you have to get

lysine every day just like vitamin C

so those that’s the basic idea here that

there is a mechanism

um once I you know I’ve started the

research uh trying to follow this

through back in history and forward and

see what’s going on for people to

whether people are looking at this and

investigating this

um pauling’s associate in this whose

name is rest right next to uh Pauling

and every one of the patents and all the

papers is Matthias Wrath and Matthias

wrath also recommends the amino acid

Proline

um and so this was not specifically

recommended by Pauling we looked into it

and and actually after uh Pauling died

they did discover the proline binding

site I talked to the people at the

University of Chicago and in fact this

binding site

also seems to be what holds the sticky

it’s called foa

surface to the LDL or bad cholesterol

molecule making lipoprotein small a

so Proline seems to be a to be involved

in both putting the molecule together as

well as sticking and in the test tube

Proline is at least three times more

effective in lysine and dissolving

plaque

all right we’re gonna

right back so stay tuned with us we’re

going to have a great show today

[Music]

okay welcome back to our program this

afternoon technology hour and I’m your

host Lynn we’re visiting today with Owen

on a Rowe he’s the director of the

vitamin C Foundation who has really

brought to light

um or at least much of the information

that was developed and patented by uh uh

Dr Rath and um and also Dr Linus Pauling

um so we were the music kind of covered

up what you just said about Proline

because that’s an interesting Factor as

well and um

it looks like both of the lysine and

Proline which are what what are amino

acids and to remind everybody those are

the constituent building blocks of

protein when we digest our protein

animal protein it breaks it down into

amino acids then our body puts it

together into our proteins

and so but unlike lysine Proline is can

be made by the human body we think that

as people age they might make less of it

and that might explain why there’s more

cardiovascular disease as people age so

we think Proline and lysine and vitamin

C are the three vital

nutrients here with respect to

cardiovascular disease both stopping the

problem and then reversing the problem

and of course the question that must

come to mind is if this

if there’s any validity to this

whatsoever why why hasn’t science been

been looking at it

well if you want me to go ahead I could

give myself and I want to make note that

um in over this past week uh and just

researching vitamin C and everything

that I could find in my uh 35 years of

papers and reports uh I you know I came

across something that was pretty

incredible how it actually was a paper

on the government's stonewalling vitamin

C and of course I looked right there and

here it goes back to reciting the time

where polio in the late 40s early 50s

when there was this terrible outbreak of

polio where it was disclosed at many of

these first uh large meetings of the

government and doctors and research to

say that polio could be eradicated with

high doses of Vitamin C speaking of Dr

Fred Kleener
and Dr cleaner The Story Goes and is

that he was treating a patient that used

he was a Reedsville North Carolina

physician and they used to make house

calls in the 1930s and 1940s and a

patient had two distinct conditions one

that was untreatable or not no known

treatment the other one was known to be

treatable by vitamin C and he happened

to keep a have some for injection and

the particular ailment caused the skin

to be blue and he it was an element that

you could provide vitamin C and and
return the skin color so he did that and
he observed that the other supposedly
untreatable ailment a viral ailment
cleared up and that precipitated his
research into how a keen observation
until I’ve got to read a reporter who
wrote the 1954 that he she was speaking
with or with Dr clenner and he had
showed slides of hospital records and
fever charts and told of case after case
of meningitis Encephalitis virus
pneumonia and serious complications
following scarlet fever and other
diseases treated with massive amounts of
vitamin C and what’s interesting here is
that many patients had not been expected
to live but huge amounts of antibiotics
have been given without success in most
instances fevers range from 103 to 105
degrees Fahrenheit within a few minutes
after the vitamin was injected
fever started to drop and temperatures
frequently frequently reached normal
within a few hours and again this was a
Adele Davis writing in 1954 about the
cleaner work but that’s absolutely true
Dr cleaner’s paper which was presented

to the American Medical Association he

gave the paper in person was that 60 out

of 60 were completely cured of polio in

that manner

so right there early on but yet here

comes the vaccines and the

petrochemicals and here we go and we

have this terrible care situation that

was created not to mention millions of

people died and certainly in Japan

because six six thousand uh people died

of polio and just uh a short period of

time in research studies that America

did on the vaccine before they got it

right that's right and you know polio is

a success for the VAC for the vaccine

but you're absolutely right that it it

because of the the emphasis on the

vaccine this other treatment with

Vitamin C was put on the back completely

ignored and some success was completely

ignored but there's a terrific book out

I'm sure you're aware of that tries to

bring this old research back into the

Limelight and that's Dr Thomas Levy's

book called vitamin C infectious

diseases and toxins

hearing me incurable it was written in

2002. and the the problem with the

vitamin C and its ability to attack

viral infections it’s not that there is

too little information that there’s too

much information

I know or I’ve read that there are 24

000 studies on vitamin C there’s up to

80 000 articles and reports it’s almost

impossible for a human being to read the

abstracts for those things much less

read the entire study but Dr Levy has

done a remarkable job of a Sim as a

textbook writer might assimilating this

information he writes about cleaner that

he was able to demonstrate repeatedly

that vitamin C appears to be the ideal

agent for killing any infecting virus of

course to our listeners Dr Levy many of

them will remember we’ve had on the show

as a fabulous doctor from Peak

Performance who’s developed the studies

to tell you whether or not you react to

the materials that are put into your

mouth through the Dental Association

that’s right in fact that’s what got Dr

Levy interested I think in vitamin C

he’s a cardiologist turned the

researcher and a dentist that’s right

um what what’s again since you brought

up old and I just want to kind of finish

up on this here we have a you know Dr

Levy’s book was published in 2002 much

less written before that so they he

didn’t know anything about this SARS

epidemic we’re facing

um and of course we can’t know for sure

without trying that the vitamin C but it

has been effective against every virus

up to this point in almost every

bacteria in fact Dr Levy’s book starts

that amazingly vitamin C has already

been documented the medical literature

to have readily and consistently cured

both the cute polio and acute hepatitis

two viral diseases still considered by

modern medicine to be incurable

regardless of the treatment used and

then he goes on

citing 1200 studies

to basically support his notion and

challenge anyone to take a look at the

studies and bring up their own

that shows anything to the contrary and

so the bottom line is Vitamin C not only works it works within minutes bringing

fevers down it should be undeniable the

only way it could not could be denied is

this ignored it’s not tried so instead

of being hooked up to our beds in the

hospital with sugar water

we probably should have an IV going and

What vitamin C that’s exactly right in

fact if you know anybody here who knows

anybody or if they’re going to be facing

any of these whether it be West Nile

whether it be SARS

they would be wise to find one of the

500 Physicians quietly they don’t

advertise it who are giving IV vitamin C

and curing viral infections routinely so

this might be a doctor that is known to

do chelation

or a nurse practitioner that is known to

give vitamins by way of injection or to

IV that would be giving a nutritional

supplement to to directly into the blood

through IV now what’s interesting of

course is that we take you know the

problem we have of Hong Kong 60 million

people are terrified right now and

rightly so

um death rate looks to be much higher

than they’re publicizing you cannot put

60 million people on vitamin C IV

uh you can put the people that get the

acute illness on it but you you can’t

the way that they’re gonna have to fight

this uh when they look at this

literature when people make this

available and we can talk about the fact

that the government right now is trying

to shut this up in fact that vitamin c

does I would like for you to go into a

bit of that because that’s really pretty

frightening right there you know it is

and I just have to believe that the

people doing I think they are acting in

the best interest they really believe

the fact that if there were a cure like

what I’m talking about for viral illness

everybody would know about it so

therefore it can’t be true and that’s

why these books by Levy and these

research papers are invaluable

um so we do we do have that problem but

if but people are not going to be able

to use IV no prevent it so that means

they’re going to have to be taking by

mouth vitamin C

yeah what’s the best source for this is

it would you say the uh well Levy

recommends sodium ascorbate ascorbic

acid

um you know with the amounts we’re

talking about it can only be uh you know

the regular things that you would would

buy at a store I mean it’s not going to

be uh there’s not going to be a lot of

choice in this it’s probably going to be

a shorts when people find out the uh uh

there’s all sorts of aspects to that I

know that Dr kathgar Who has been

treating 20 000 patients of of viral

illnesses basically curing him for the

since at least the 1970s claims that

ascorbic acid is the only

formed by mouth that has the what he

calls the ascorbate effect the effect of

destroying these viruses he thinks it

has to do with the fact the molecular

structure that when it’s bound with

something it can only accept one free

radical the ascorbic acid it can soak up

too and he Likens using high amounts to

vitamin C like pouring water on a free

radical fire and so that’s one of the

reasons he thinks of very very high

amounts have the effect that they do on the body and his claim is that all the Damage Done during these illnesses is the is a function of the free radical extremeness that’s uh ex you know that this spurts out once these illnesses start their Havoc

so that means that it’s free to morph uh into whatever it needs to become or to destroy a cell just to steal the electrical potential

to answer your question I think it is ascorbic acid and just again the fact is that uh that’s one of the things about these technology products that I’m connected with it’s a recognition that people just can’t take the pill the number of pills that you would have to take day after day and so they they turn these into drink mixes uh sweetened by Stevia you can either uh the regular taste is is very very good but you could add a little bit of Pineapple orange or orange or something and Vary The Taste from day to day but you avoid the dozens and dozens of pills that would other by Otherwise be required on a daily basis to boost your the vitamin C to what we

what our liver should be making if we

were like the rest of the animals what

does Ester C uh

yeah there’s two sides to to that for my

knowledge and I from talking to the

Linus Pauling Institute Pauling was a

little bit wary of it it is known that

Esther C does is absorbed faster does

get him to sell faster and less of it is

required to skirt to cure scurvy in

guinea pigs so on that part there’s no

doubt however it’s not the same vitamin

C that you’re that the animals in the

animal Kingdom’s liver makes and liver

so in a sense it’s a it’s an enhanced

form of vitamin C

but the you know I think you know so I

think the jury is a little bit out on

long-term use so I I you know I would

stick with I stick with ascorbic acid

myself now what’s the difference between

you mentioned sodium ascorbate and we

have calcium ascorbate and that might

just be where it figures into it can not

be bound with anything or is sodium the

best if you’re going to have a balanced

sodium is the way well one of the

reasons I respect Dr Levy because I know

the base of literature that he went

through

and his recommendation and his in his

book just published is either ascorbic

acid or sodium ascorbate and some of the

reasons that they mentioned sodium must

score about I think is it just makes it

a little less acidic a little easier on

the stomach remember we have we as we

have to take it in by mouth most animals

produce it in their liver so whatever

they get by mouth is extra and I think

that’s sort of the reason for sodium

ascorbate just to help people too

because

he also questions though against in the

book against calcium ascorbate and uh

I’ll leave that to the readers of his of

his text to read that okay so I think

that ascorbic acid seems to be that’s

what Pauling recommended

um it is it is in fact if there are any

Physicians who are thinking about IV

vitamin C you cannot give ascorbic acid

IV it has to be sodium ascorbate IV and

either at the vitamin C Foundation you

can find a link to how to prepare uh you

know high-dose vitamin C for IV

application if there’s all the doctors

out there right that are doing chelation

with the organizations that of course

have formulations too well there are

um again uh you can it’s fairly easy to

make in the instructions uh

uh again are on the website Mr Dr

Cathcart who is again the world leader

and how to do this and it’s also a video

that Physicians can buy but I think you

know again as the word starts to spread

that vitamin C and not vitamin C in low

doses they’re absolutely right they have

absolutely proved that if you take

vitamin C in a low dose it does not it

is not antiviral

okay it only becomes antiviral at what

Levy calls optic doses which are larger

than megadosis I mean we’re talking

maybe 50 to 100 grams 50 000 to a

hundred thousand intravenously depending

on the disease and so for something like

SARS my guess is we’re probably talking

more

wow all right we’re going to be right

back so stay tuned with us we have more

to come

[Music]

hey welcome to the second portion of the

technology hour I'm ran your host and

we're visiting today with uh Owen

vanarow director of vitamin C foundation

and uh Linus pauling's work on vitamin C

and Dr Ross as well

um and perhaps we this would be a good

time to give out your uh your address

and your website well yeah I'd

appreciate that our we have uh as you

mentioned last week I have uh about four

fairly large sites aimed at different

aspects of medicine and alternative

medicine

so the most visited site these days is

the vitamin C

foundation.org it's all one word vitamin

C foundation.org and that's where we try

to post the latest new news and studies

on vitamin C and help you know we like

to look at these stories that come out

that say that vitamin C is harmful we

make it our job to investigate and see

if there's any basis and so far to date

there has not been any basis in any

story that claims that vitamin C and

higher in high doses is harmful to the

vast majority of the public so is that

written out pardon me is that written

out all the way in vitamin C Foundation

yes okay vitamin C Foundation it’s all

one word dot org we also I’ve uh the

first site that we ever started was

after we found the video on heart

disease where Linus Pauling is is saying

that high doses of vitamin C and lysine

can can control even cure cardiovascular

disease is Paul

callingtherapy.com and Linus pauling’s

last name is

p-a-u-l-i-n-g and intherapy.com and

again we wanted to post the site because

um uh one of the way that medicine has

worked in the past is the the people

that made these discoveries were

forgotten and then when it becomes so

obvious that they can’t ignore it

anymore somebody else steps up as having

invented the uh

therapy and we want to make it very

clear that this is was Linus pauling’s

last contribution to humankind and and

so we try to honor him with uh the fact

that of his invention and trying to make

it a little more a little easier than

reading maybe the the technical papers

on what exactly the theory is and and

then we have a lot of testimonials that

we’ve collected over the last five or

six years and we’ve tried to put

people’s names and phone numbers to

something it’s always dangerous but you

can talk to the people

uh who have experienced basically uh

reversals and heart disease and then we

maintain another website called Bolin

report B is in boy

o-l-e-nreport.com this is a daily

newspaper of Health news but we look at

it for the stories that the regular news

would ignore and that is all the studies

that come out every day on vitamin C and

antioxidants and that type of thing

excellent and this is what we call in

the medical field Ortho molecular or

Ultra molecular medicine that’s correct

which has brought us to the point where

uh even before we had the gene coding we

had Ortho molecular medicine because we

had understandings of the inner

relationship of and pathways on

electrical cellular basis so cellular

cellular nutrition uh is been with us

for 20 years anyway at least you know

what’s interesting and since we’ve been

talking about vitamin C and Proline I

don’t know if you’ve got a chance to

interview Dr Matthias wrath or anybody

who is promoting his current uh program

but they have made another exciting

discovery about the very same

ingredients with respect to cancer I’m

not sure if you want to go into that

right now or not but it’s well either

why not I mean

basically and I may have the numbers

wrong and I think they’re slightly

proprietary but something around 14

grams of vitamin C 12 grams of Lysine

two grams of Proline and green tree

extract is what Dr wrath is now saying

halts or stops cancer in its tracks and

he has a very sophisticated program and

I must assume that what’s happened is

through these years of treating people

with these with these substances for

heart disease they started the notice

that cancer was stopping at the same

time sure and so exactly what you said

they call it cellular medicine and it’s

you know it seems it seems to be a

cure-all and I’m sorry about that but

you know it’s one of these things where

there’s no question that a lot that many

of the ills of mankind have to do with

us not making vitamin C in our livers

there you go that’s that’s the whole

thing and and so of course when

petrochemical societies uh certainly can

figure that out and then have a handle

on uh of course this is how they have to

make and bind drugs so that they mimic

natural elements that we would normally

get from Plants uh you know so that they

can be owned and patented I mean it it

has helped in the pharmaceutical

industry but these ways are known well

what’s interesting too is and one thing

I’ve noticed and you probably the

classically changed physician knows that

the substances the prescription drugs

that he is prescribing have an effect

but they also have a toxicity and so he

normally will try the smallest amounts

that that can provide the desired

effects so they kind of go upward

um until they get you know knowing that

they’re increasing the danger to the

patient and to jump start and to save

lives

uh to get you get maybe somebody that is

in a desperate need where finally they

end up at the doctor’s office and here

whoa it’s life-saving right well I need

the drugs right and so what I was going

to point out though is that while there

they start very low because they’re

toxic the ortho molecular Paradigm that

I think the ortho molecular doctors are

beginning to discover is it’s a

completely opposite these substances

like vitamin C and lysine have no known

toxic effects so you start up at the top

at a very high level and then you back

off because of what to avoid the

nuisance effects and die off for me and

then and actually the effect of going

slow to the point where the the person

or the organism can get rid of the die

off right that’s right damaging organs

or anything you know that’s a you know

that’s a whole other problem with

anything that would destroy cancer and

leave the remnants or anything that
would destroy you know anything in your
body you’re absolutely right the
toxicity aspect of that but I was just
pointing out that the ortho molecular
approach isn’t is something that a
regular doctor would not be comfortable
with because they’re so used to the
substance this is you know vitamins to
them don’t seem that much different than
drugs because they have a very very
small amounts usually have strong
physiological effects so they look at it
in the same family as drugs and I think
that’s one of the things that happened
with vitamin C Erwin Stone thought it
was misnamed it had vitamin-like
properties but unlike the other vitamins
which are generally required in small
amounts vitamin C is like a missing
metabolite it’s used by so many
processes it’s produced by in such large
amounts by The Animals missing stress
hormone is another name because if it’s
you know being in the adrenal cortex
being it’s one of the most
the places in the body where the

concentrations are the highest well yeah
and as we said where if it’s stored it’s
the adrenals because it’s needed
consistently and that it’s been said
that vitamin C is considered the oil for
the body like an oil is to the engine of
a of a car right I think that’s a good
analogy and uh so we’re that’s I mean
that’s really where we’ve we’ve uh been
focusing
um I think it’s kind of interesting and
as you know that there have been a
couple reports lately uh that have made
the news that and they they mix some
things that are known I don’t know
uh readers or the listeners know that
minerals are different than vitamins
generally minerals can be toxic if you
gave High sustained amounts or vitamins
can rarely become toxic and so there’s
been reports lately that take some known
toxicity of minerals and mixing that in
with vitamins and again apparently
trying to scare people away from things
like vitamin C which knowing it’s huge
beneficial health uh you know how
beneficial it is to health I just don’t
understand how anybody could not check

their facts check their public make sure

of what they’re printing is true before

they go out and attack some of these

substances like vitamin C and and I find

that a lot of folks take one to two

thousand milligrams of vitamin C and

obviously we can see that that is not

near enough

we’re gonna have a break so stay tuned

[Music]

okay we’re back with the technology hour

talking today with Owen Funeral our

director of vitamin C foundation and uh

we’ve been talking about different

effects of high-dose vitamin C and

lysine and and Proline and it I’d like

for you to give out your uh website and

information the phone number so that our

listeners could take a look at some of

this uh data that you’ve got and this is

the this is the work of Linus Pauling

well we’re we’re definitely involved

with that with heart disease and we’re

following him and his lead and and

thankfully there was a a man of his

competence who could look at these 80

000 papers and make sense of it you know

something that I couldn’t do I couldn’t

spend my lifetime doing so thanks to

Pauling we know what we know the number

uh you can reach me personally at

1-800-894-9025 I do have a teaching

schedule

the message will tell you when I’m

available and then vitamin C

foundation.org or paulingtherapy.com and

then of course we’d love to have people

visit daily the bone report.com and

where we try to keep people up to speed

on uh what’s happening on a daily basis

in the uh world of alternative medicine

I wanted to bring out that uh for the

folks that do go to the Internet site um

just to uh

bring so that they have an understanding

of what you have a couple of formulas

one is the heart technology

uh one and then there is a an additional

one for like aortic stenosis where it is

actually calcium hardening of the valves

of the heart which you might have to

have a cow valve or a heart valve plate

replaced right

um well I I could talk about both of

those formulas and again the the idea

behind the heart technology and the

other one is called we call it a score

z9 and a scoresing for the combination

of ascorbic acid and lysine

um has that one has vitamin K added not

everybody can immediately go on vitamin

K because one of the routine

uh treatments of modern Cardiology is to

put patients on blood thinner

anticoagulants such as Coumadin or

Warfarin

and the problem with that as we

discussed last week is that tends that

will block vitamin K uptake and it has a

very effective drug for preventing

clotting or pseudohomophilia

but one of the side effects of that is

the causes or at least in animals for

certain and very probably in human

beings the buildup of calcium in soft

tissue particularly your

arteries and and your uh

heart valves well if you’re thinning the

blood with Pharmaceuticals there’s a

good chance that you will have calcium

buildup that’s right it throws it out of

solution and creates hardening and I do

believe that once the cardiologist is is confronted with these uh reports and you can find many of these reports off the second page of the bowling report right in the Medline links right in the Medline I think they would have second thoughts and be looking for other for other ways and if I could take a moment before I go into technology or the heart technology well it’s you know I I just everybody could probably figure out that I am not too enamored with the treatments of modern Cardiology and I would like to take the time well I’ve got some time here to talk about one treatment that has recently come up that uh and they’re basically putting radiation pellets in the arteries of heart patients and they’re doing it because of something called restonosis restinosis is where the plaque regrows they you know in my opinion not understanding or being exposed to the Pauling therapy therapy or theory that all plaque really is is healing it’s like a scab growing in the arteries and therefore if you do an angioplasty or cardio bypass graph

you would expect that the body healing
itself that this resinosis would happen
although it may overshoot so not
understanding it’s a healing process
they have been trying looking for ways
to stop it and they found one way and
that is to basically use radiation to
kill the or dead in the inside of the
artery and the reason I’m so against
that and I hope people wouldn’t would
really check the internet and before
they allow that to happen is that once
you kill the inside of the artery then
it can no longer heal at all and so the
vitamin C cure that we’re talking about
this heart technology or scorsine would
not be expected to work so that’s sort
of my warning to people to be very very
wary it’s FDA approved
um and it’s uh I consider it to be a
highly dangerous procedure
like chemotherapy right okay like
chemotherapy pellets kind of like that
when they put a stent in yeah they had
the similar thing with these so-called
medical stents which may be putting a
Tamil effects they’re just trying to

kill the artery I mean as if they don’t

understand they don’t understand what’s

going on that it’s trying just trying to

heal itself and uh the problem with

killing it is that all of a sudden you

know the patients that have that done

there’s probably no way that taking

vitamin C is going to cause that thing

to become alive again so you’re not

necessary you know you’ve probably

killed any chance to heal and at some

point when it completely wears out what

are they gonna you know what are you

gonna do so I I would just be very wary

of that especially since we’ve had such

success with the products like heart

technology and escorizine basically

vitamin C lysine and Proline they also

include vitamin A vitamin E CQ10

um and carnitine now what you’re talking

about with this score is E9 they’ve

added uh taurine and magnesium and then

vitamin K and as we were talking Vitamin

K is approved in Japan in very large

amounts is a treatment for osteoporosis

because it acts like a hormone and helps

to regulate calcium out of soft tissues

into the bone and so that’s uh that’s

really where where you kind of led me

for a while ago while we’re very high on

the probability that we’re going to be

able to show reversal and calcium as

well as a reversal which we’ve been

showing in the in the plaques

the uh more or less the the inside

plaques I think what we’re finding is

that the calcium tends to be deposited

more on the outside of the arteries and

we find that when we do take drugs there

are metal salts that help actually bind

these uh synthesized properties to make

them work from from petrochemical much

of the pharmaceutical industry is you

know of course is what it is and we have

these metal salts and it blocks the

magnesium

it blocks magnesium uptake so we can say

gee you know we take a lot of magnesium

but here if we’re doing any

pharmaceutical drugs at all we’re going

to need uh either another source maybe

that’s to be considered but certainly

there are many sources of magnesium

right

Linus Pauling Protocol For Heart Disease.
Linus Pauling Therapy For Heart Disease.

Linus Pauling Protocol / Dr Matthias Rath / Pauling-Rath Lysine - Dr. Linus Pauling Heart Protocol , Lysine Dosage, with Dr Matthias Rath .

Hosted by Patrick Holford, Institute for Optimum Nutrition.

what you are about to say is no ordinary

video it is the last discovery of a man

rated by many as the greatest living

scientist this century it contains a

message he wanted you to hear in order

to prevent the single greatest cause of

premature death dr. Linus Pauling the

only scientist ever to have won two

unshared Nobel prizes as well as 48

honorary doctorates realised that the

foundation of health depends on taking

into the body the right molecules the

right food

he called this approach although

molecular medicine his investigations

into the extraordinary properties of

vitamin C led him and his associate dr.

Matthias Rath to uncover what may prove

to be the primary cause of heart disease

the case of Gary my first patient to

follow dr. Linus Pauling’s

recommendations illustrates the

importance of what you’re about to hear

Gary first came to see me after having

had three strokes he had such severe

angina that a brisk walk would bring on

extreme pain tests showed that one of

his coronary arteries was completely

blocked he had high blood pressure was

taking three drugs to help control this

within only five months following dr.

Pauling’s recommendations given on this

video he had a normal blood pressure

without drugs and could get his heart

rate up to a hundred and eighty beats

per minute without experiencing any pain

whatsoever Gary is one of many people

whose lives have been saved by what

you’re about to hear so listen carefully

who knows your life to
may depend on it I’m pleased to be with

you here at my home on the coast of

California at the Salmon Creek in the

Big Sur region surrounded by national

forests and the Pacific Ocean and I’m

glad to be able to participate in an

international conference dealing with

the prevention of disease especially of

cardiovascular disease and the value of

improved nutrition especially vitamins

essential amino acids and other

orthomolecular substances in the

improvement in the health and well-being

of human beings so all over the world

[Music]

for some time now I have believed that

it should be possible to get the nearly

complete control of cardiovascular

disease preventing cardiovascular

disease from developing coronary artery

disease strokes peripheral the

circulatory disease and other aspects of

of heart disease and circulatory disease

the reason for my believing this is in

considerable part to theoretical rather

than based upon clinical evidence I

remember that

Einstein said that if he read about a

surprising new experimental discovery

the temple desists had made he would not

believe it unless there were a good

sound theoretical reason for expecting

this phenomenon to occur well in this

case about vitamin C in relation to

cardiovascular disease the arguments are

quite straightforward for two decades or

more the workers in the field of

Cardiology have said that the primary

cause of cardiovascular disease is a

lesion in the wall of an artery lesion

occurring in the region where there’s a particular stress close to the heart saver the pulps is especially strong or we’re an artery has a bifurcation splitting into two smaller arteries and various turbulence I remember that a dozen years ago Brown and Goldstein published an interesting article in Scientific American Brown Goldstein our investigators in Texas who received the Nobel Prize in medicine for their discovery of the binding region that holds LDL rodents they lipoprotein them the per sentence in their paper was a statement the primary calls of cardiovascular disease atherosclerosis and other aspects of cardiovascular disease is a lesion in the wall of an artery well a couple of years ago one of my partner’s didn’t my young associate dr. Matthias Rath

and I were continuing our conversations about the nature of heart disease I mentioned that Brown and Goldstein had made the statement that the primary cause of cardiovascular disease is a lesion in the wall of the blood vessel and artery which is followed by a whole

cascade of the efforts by the human body

to control this lesion to heal this

lesion fibrin and fibrinogen laid down

and the cells kept stuck they're become

foam cells there are many effects that

occur after of what they call a primary

cause the development of the lead

so I said you know here's a question

Why should there be a lesion in the wall

of the blood vessel I think I know what

the answer is the answer is that people

do not get enough vitamin C almost

everyone in the world suffers from a

deficiency in vitamin C vitamin C is a

very powerful and important nutrient it

does many different things in the human

body such as potentiating the immune

system making the immune system more

effective in protecting us against the

disease but there's one very important

thing that vitamin c does that is

related to heart disease the tissues of

the human body are made strong and tough

by fibrils of the protein collagen

collagen is made in rather large amounts

in the human bodies and the bodies of

other mammals yep

strengthens the blood vessels in the

skin and the muscles and the bones and

the teeth very important substance

you can’t make collagen without using a

vitamin C collagen is made from another

protein pro-collagen by hydroxylated

y style and pro I’ll residues in the

pro-collagen converting them into

hydroxyl ISIL and hydrox a pro while

residues with every hydroxyl group that

is introduced one ascorbate ion one

molecule of vitamin c is used up so

people who have a low level of vitamin c

in their bodies because of the low

intake of foods containing a torment

because of not taking vitamin C

supplements do not make enough collagen

to make their tissues strong and in

particular not enough to make the blood

vessel strong people who don’t get any

vitamin C for two or three months died

of scurvy half of the people who died of

scurvy died because of internal bleeding

the blood vessels become so weak that

they just burst open and the patient

dies as a result the other half died of

some current infection the scorbutic

patients are not able to protect

themselves because they don’t have

enough vitamin C to make the immune

system work effectively so the primary

cause

and we published this a little over a

year ago in the Journal of

orthomolecular medicine the primary

cause of cardiovascular disease is too

small an amount of vitamin C in the

human body the result of that is that a

lesion develops in the arterial wall and

that is followed by the whole cascade of

efforts to heal the lesion and the

including ultimately laying down

atherosclerosis plaques of lipoprotein

well here we have now an understanding

of why cardiovascular disease has such a

high incidence in human beings human

beings are not able to make vitamin C

and they don’t get enough of it in their

foods to put them in really good health

the result of that is that lesions form

in the arteries and the person 50% of

the people in the United States and

other developed countries die as a

result of primary heart disease strokes

or a peripheral circulatory disease a

problem of that sort what we need to do

them is to improve the health through

the intake of enough vitamin C to make

the arteries strong and in this way to

prevent the high mortality from

cardiovascular disease

[Music]

[Applause]

now one important fact is that animals

in general don’t develop cardiovascular

disease that is similar to human

cardiovascular disease an animal that

has fed large amount very large amounts

of cholesterol develops a sort of heart

disease but it differs in many respects

from the cardiovascular disease that

kills human beings why is that the

reason is that most animals manufacture

their own vitamin C in their livers and

they manufacture it in such large

amounts that their blood vessels and

other tissues are stronger than those of

human beings and do not develop the sort

of lesions that result them in over

cardiovascular disease such as humans

yep we might ask what happened the

several hundred million years ago when

the first animals began running around
and eating their close relatives the
plants you know we know that the
biochemical reactions that go on in
animals are very nearly the same very
little different from those that go on
in plants plants all plants manufacture
all of the vitamins and of course they
manufacture them in the amounts that put
the plants in pretty good plant health
animals who eat these plants are getting
enough of most of the vitamins to keep
them in reasonably good health because
their needs for vitamin A and vitamin E
and the B vitamins are pretty much the
same as those of the plants consequently
the first animal ancestor of all of
present animals eating his ancestors
underwent a mutation or a series of
mutations such as to lose the ability to
manufacture these vitamins that means
that the animal was streamlined that
didn't need to waste energy and material
making the vitamins because it was
getting pretty good amounts in its plant
foods that's why all animals men and
other human beings and other animals
require no vitamin a vitamin E B

vitamins

essentially all of the vitamins this

didn’t happen with vitamin C whilst

animals manufacture vitamin C and why

the answer to that is that animals need

more vitamin C for good health than

plants do one of the most important jobs

that vitamin C does in the human body is

to manufacture collagen which makes the

tissue strong it is the principal

structural macro molecule of animals to

make collagen you use up vitamin C

plants don’t rely on collagen they don’t

manufacture collagen to make the plant

structure strong they use instead a

carbohydrate called cellulose which

strengthens the plant tissues

consequently animals need more vitamin C

and plants do for this reason

practically all species of animals dogs

cats horses cows elephants whales and so

on

practically all species of animals have

continued millions of years after

millions of years to manufacture vitamin

C in their own bodies and not rely on

what they get in their foods now how

much do animals manufacture well it

depends on the body weight of the animal

the amount manufactured per day is about

proportional to the body weight if you

convert it to the weight of a human

being 70 kilograms and adult human being

it is on the average about 12 grams of

vitamin C per day 12 thousand milligrams

the RDA for vitamin C given pronounced

in the United States by the food and

nutrition board of the National Academy

of Sciences is 60 milligrams a day

animals

the average animal manufactures 200

times that much in his liver 200 times

that much

[Music]

why is our the a 60 milligrams the

statement by the food and nutrition

board is that vitamin C is important

because it prevents scurvy and many

careful studies have shown that 60

milligrams a day is enough to keep

almost all human beings from developing

scurvy and I agree it is 60 milligrams a

day will do that job what these medical

and nutritional authorities have not

done is to ask the question could it be

that larger intakes of vitamin C have

much greater value in improving the

health of human beings and especially in

the prevention of disease and those

adjuncts to appropriate to mention

therapy and the treatment of disease

this is a question that I began to think

about around 25 years ago when I have

this idea when I realized that the

vitamins have essentially no toxicity

that you can take a thousand times are

the a of vitamin C and one day or even

every day for months or years without

damaging your body but in fact doing

good I thought how look in the medical

literature and see what the optimum

intake of vitamin C is and the optimum

intakes of other vitamins too and of

course I was disappointed when I looked

in the medical nutritional literature I

found essentially no information about

the optimum intakes as a matter of fact

there was some information in the form

of reports mainly by individual

physicians about the value of vitamin C

in larger though

or of other vitamins in improving the

state of health of patients with cancer

and other diseases of heart disease

diabetes one investigator here in Canada

forty years ago said that in his opinion

cancer was a vitamin C deficiency

disease another investigator in Canada

around 35 years ago said that he had

shown that patients with atherosclerosis

were benefited significantly by taking

large amounts one gram or two grams a

day of vitamin C well it’s astonishing

that even after these reports were

published with evidence from in the case

of heart disease from NGO graphs that

the lesion that plaques that had formed

in the blood vessels had got smaller the

medical establishment paid no attention

to this essentially no research was done

I used to know a man a biochemist named

Owen Stone who had been had had as a

hobby checking up on vitamin C over a

period of about 40 years collecting all

of the publication’s mainly from doctors

about their observations of the value of

vitamin C in seeming to help control

prevent or treat many diseases in 1972

he published his book the healing factor

vitamin C against disease there were

about 700 references to the medical

literature in the

book all - essentially all - papers

which were reports by physicians that an

increased intake of vitamin C helps

prevent various diseases and helps in

the treatment of various diseases a

hundred different diseases that seem to

be prevented to some extent by an

increased intake of vitamin C I think

this book and the books that I myself

published such as vitamin C and become

cold had quite an effect on the public

in general but rather little effect on

the medical profession the medical

establishment for example well I may say

there’s been a significant change in the

last four years the food and nutrition

board omits last report and other

volumes two other books about health

published by the National Academy of

Sciences say to be in good health

you must get good amounts of these three

antioxidant vitamins vitamin C and so on

and then the books go on to say but

don’t take vitamin supplement this seems

to me just purely irrational I just

can't understand why they include this

advice don't take vitamin supplements

you may have trouble finding foods that

are high the antioxidant vitamins and of

course they're expensive and more than

that the amounts of these vitamins that

I recommend to people for protection

against heart disease and cancer and

diabetes and various other diseases for

prevention of these diseases are much

larger than the

that you can get in your boots no matter

how carefully you select your dial so

I'm hoping that the next step will be

that the nutritional authorities and the

medical authorities will include in

their recommendations that supplementary

vitamin C be taken in fact a little over

a year ago three investigators who are

to some extent associated with the

Institute in which I work published the

first really completely reliable

epidemiological study about the value of

supplementary vitamin C in the

prevention of disease the principal

author of this paper was dr. James

instrum who is a well-respected

epidemiologist in the University of

California in Los Angeles School of Public Health the project was undertaken because of another assertion of mine of Morton Klein who is one of the co-authors what Incline used to be connected with the Department of Health Education and welfare in the United States he remembered that this department had carried out a very large and expensive study of eleven thousand three hundred and forty eight adult human beings in the United States in ten different regions over the country this study involved interviewing each of the eleven thousand on subject you getting questioned there’s and among other things but their state of health and mount of exercise and so on among other things what foods they ate whether they had a good diet or a poor diet and whether or not they took supplementary vitamin C for some reason although this study was begun in 1970 and continued for more than 10 years so that each patient will each subject was followed for ten years for some reason and no analysis had ever been made of the possible value of taking supplementary

vitamin C until Marc Klein suggested

that the study be carried out by Jim

instrument his associate at the

University of California in Los Angeles

the amount of vitamin C that the

subjects who took supplementary vitamin

C was getting was somewhere between five

and ten times RDA the persons the

subjects with the poor diet who got less

than the are the heir of 60 milligrams a

day

those with the better diet and good diet

including fruits and vegetables got some

hot more perhaps twice as much a hundred

and twenty and the ones who took

supplementary vitamin C got probably

somewhere around 500 or 600 milligrams

perhaps on the average as much as 10

times the RDA there’s much evidence said

even the small mouth of supplementary

vitamins does a lot of good in improving

health just an ordinary vitamin mineral

pill which would double the intake

because

these tablets usually contain about the

RDAs to recommended amounts just taking

a supplementary vitamin pill that’s a

lot of good but taking more five or ten
times as much vitamin C clearly does
much more good in this investigation of
the eleven thousand three hundred and
forty eight subjects followed for ten
years information was obtained about the
death rate and the causes of death the
study carried out by dr. instrument his
associates gave the result that men who
took supplementary vitamin C not agreed
not just five or ten times on the
average the RDA had forty two percent
smaller stem age standardized death rate
from cardiovascular disease heart
disease and strokes than men who just
had a good diet but didn’t take extra
vitamin C forty two percent but their
death rate presumably the incidence of
cardiovascular disease and the death
rate cut nearly in half apparently just
by taking this rather modest amount of
supplementary vitamin C the death rate
from cancer of these men was decreased
by 25 percent and the death rate from
diabetes infectious diseases who was
decreased by about fifteen percent women
the women in this study also were

benefited but to a somewhat smaller

extent than the men and the I don’t know

why I don’t think the doctor instrument

houses good understanding of why taking

supplementary vitamin C does a lot of

good for women cutting down the death

rate from heart disease to by something

like 30% but even more for men cutting

it down by 42% so here we have a

thoroughly sound analysis of prevention

prevention of death from heart disease

and other diseases just by taking a

modest amount of supplementary vitamin C

the biostatisticians and the carton the

biostatisticians in particular with whom

i’ve had contact and who made published

statements about this work by um strim

seemed all to have a high opinion of the

work they do not criticize this bio

statistical analysis in the way that

sometimes it’s possible to criticize

some analysis i think there’s no doubt

that the incidents and of and mortality

from cardiovascular disease can be cut

down really significantly by taking by a

large intake of vitamin c

I read a lot actually hundreds of papers

about cholesterol low-density

lipoprotein cholesterol in the body and high-density lipoprotein cholesterol low-density lipoprotein is the said to be the harmful one that causes atherosclerosis by depositing cholesterol in the walls of the arteries for their legions a high density lipoprotein is the good life protein these lipoprotein molecules pick up cholesterol in the tissues and carry it back to the liver to be reprocessed or got rid of in the form of my lessons we manufacture four grams of cholesterol per day and the adult human being in the liver it’s a very important substance required for good health of essentially all cells in the human body and the lipoproteins Carey cholesterol through the circulation in order to move it from the liver where it’s manufactured into the cells we have you can’t go on manufacturing foregrounds who look up cholesterol a day without getting rid of some of that argued pretty soon be turned into nothing but cholesterol the mechanism that getting rid of cholesterol is to hydroxylate it into bile acids and these vile acids are then

injected into the

[Music]

intestines and eliminated though some of

them are reabsorbed in the lower bowel

and reconverted to cholesterol vitamin C

is required to convert cholesterol into

bile essence so vitamin C provides us

with a mechanism of protecting the body

against having too much cholesterol this

is probably the main explanation of why

many investigators who have studied

vitamin C in relation to cholesterol

have reported that having a high level

of vitamin C in your body is correlated

with having a low level of cholesterol

and taking extra vitamin C decreases the

cholesterol in persons who have too high

a cholesterol level it helps to

stabilize the present concentrations of

cholesterol in the body at the right

levels another way in which vitamin C

and vitamin E and beta carotene function

to provide protection against heart

disease is their antioxidant activity in

preventing the oxidation of cholesterol

to oxidized cholesterol oxidized

cholesterol is a really harmful form and

the vitamin C and the other vitamins the
antioxidant vitamins protect us by
preventing this oxidation now there’s
been an interesting development during
the last four years starting about 35
years ago in fact dr. Cora Berg who’s
now professor Cora Bergen Oslo Norway
discovered a new lipoprotein in the
blood of human beings he named it
lipoprotein a lipoprotein small a and
ever since then there have been many
investigators interested in
cardiovascular disease studying
lipoprotein a and the protein part which
is called Apple protein a the amino acid
sequence is known and didn’t know just
what lipoprotein a is lipoprotein a
could be said to be a derivative of LDL
low-density lipoprotein the LDL molecule
consists of a protein called the Apple
protein be very large for him hundred
thousand atoms in the molecule which
acts as the shell of a sphere the
interior of which consists of tant’s
wipin lipids especially cholesterol and
triglycerides but mainly cholesterol and
when apple protein a is attached to the

apple protium

be 100 to make a put him double that

size then that new lipoprotein the

interior being filled with cholesterol

and other lipids this new lipoprotein is

present in the circulation but usually

in most people in rather small amounts

and some practically zero and some

twenty or fifty or a hundred

milligrams per deciliter a number of

years ago of investigators mentioned

that in the atherosclerosis plaques

usually described as consisting of LDL

we'll that's they lipoprotein

immunological studies showed that

lipoprotein a is present during the last

dozen years twelve or fourteen years

dr. ritual by Siegel in the Medical

School of the University of Hamburg and

Germany has been studying cardiovascular

patients with respect to lipoprotein a

and year after year she carried out

studies she and her assistants carried

out studies about four years ago she and

her student Matthias Rath who later

became in the search of mine and two or

three others carried out a very careful

study of tissues a artists from patients

who had had bypass operations involving
removal of these arteries and
replacement with saphenous veins the
bypass operation and they were able to
show that in fact the atherosclerosis
plaques consist entirely of lipoprotein
a lipoprotein small a no ordinary LDL
just lipoprotein small a moreover other
investigators have reported that if you
have less than twenty milligrams say
between ten and twenty milligrams of
lipoprotein a
the human body you don't develop
cardiovascular disease atherosclerosis
and cardiovascular disease dr. Ratton
and I said the reason that human beings
have so much lipoprotein a in their
bodies is that their blood vessels are
weak because of not having the vitamin C
to synthesize enough of the proteins the
fibrous proteins collagen and elastin to
make the blood vessel strong and
lipoprotein a is laid down on the walls
of the blood vessels to help strengthen
it that it is working as a surrogate for
vitamin C well the manufacturer of
lipoprotein a is not well standardized

in human beings the amount that puts

people in the best of health is 10 to 20

milligrams per deciliter and people with

that amount or smaller mouth do not have

cardiovascular disease but about half of

the people in the countries where it’s

been studied have more than 20

milligrams as much as 100 milligrams of

lipoprotein a and they are the ones who

die of cardiovascular disease the

principal risk factor for cardiovascular

disease is the amount of lipoprotein a

in the blood if you have more than 20

milligrams per deciliter you are at risk

well of course not many people know

that’s 1% or fewer even in the United

States and Great Britain Canada know how

much lipoprotein a

they have in their blood because if you

send blood in for analysis they don’t

report him

it’s just lumped in with the LDL which

is present in larger amounts but it

would be a good idea for people who have

more than 20 milligrams of life probably

in a in their bodies to take action to

prevent the development of

cardiovascular disease so now what can

they do they can take extra vitamin C several grams a day at least three grams a day if they are real at risk somewhat more or if they have had a heart attack or if members close relatives brothers sisters fathers mothers have died of cardiovascular disease then these persons are at high risk for cardiovascular disease and they should follow an action take more than one action to prevent that disease from developing one thing that is known we have studied it and others have studied it is that if you take large amounts vitamin C the level of cardio protein the a in the blood decreases so that’s a method of cutting down on the chance of cardiovascular disease and of course that also lowers the cholesterol level cholesterol is involved to some extent and that helps prevent the oxidation of the cholesterol to oxidized cholesterol but there’s something else that the person who is at risk or any person can do to cut down the incidence of and mortality from heart disease and strokes and the peripheral arterial disease we can ask why are plaques of lipoprotein a

formed in the arteries in places where

lesions have occurred them the fibrin

and fibrinogen has been laid down why

well and the lipoprotein a sticks to the

walls of the blood vessels in these

regions because of the presence of

fibrinogen and fibrin with henyk groups

that grab on to the apple protein a and

these haptic groups are lifestyle groups

they are the residues of the amino acid

L lysine which is present in the blood

of every human being present in

essentially all foods more in the

proteins in meat and fish than him

vegetables the present to some extent in

vegetables too it is one of the

essential amino acids lysine a young

adult male person needs about 800

milligrams a day of lysine to keep him

nitrogen balance there are eight

essential amino acids of the 20 amino

acids the human body can synthesize

about 12 but it requires 8 from the food

from exogenous forces sources

including lysine two and a half years

ago I was at a meeting of the National

Academy of Sciences in the United States there was a little celebration there of my 90th birthday and 58th anniversary of my membership in the National Academy of Sciences USA I was in the hallway of the Academy building and another member the Academy came up to me she said the dr. polling I have heart disease my brother my father both died of heart attacks I am a biochemist but I was retired from the National Institutes of Health several years ago for disability because of my heart I’ve had three bypass operations my saphenous veins have been used up so I can’t have any more bypass operations I like to walk but I’ve trouble because after I walked a little way I developed and China pectoris pain in my heart if I take a micro glycerin tablet I can walk a little farther and then I may have to take another nitroglycerin tablet he went on say I’ve been taking vitamin C 6 grams a day 4 5 5 grams a day for several years because of your recommendation is there something else that I can do that would permit me to walk so I said well I I can make a suggestion never been tried before take lysine the amino acid lysine well I didn’t need to tell him what lysine was and that some essential amino acid and you have to get around the gram a day to be in good health and you get it your foods good he he’s one of the most distinguished biochemist in the United States recipient of the National Medal of Science in the United States so he said how much shall I take I thought here what do I know I know that people get a gram or two in their food depending upon how much meat and fish they eat and that it’s essential they have to gather around one gram it hasn’t any known toxicity in animals or human beings so I’ll make a guess I said five grams five grams a day so he thanked me a couple of months later he telephoned me and said it’s almost miraculous I started taking a gram a day and then two grams and so on within a month after I had reached five grams a day of lysine in addition to my five grams of vitamin C I could walk two miles without any nitroglycerin tablets or without any pain in the chest he said he had cut down the amount of heart medicine he was

taking him half

it’s almost miraculous he said so

another couple of months went by and he

telephoned me and said I was feeling so

good the other day that I cut down a big

tree in our yard and was chopping it up

for wood and I was also painting their

house and I got chest pains

despite his five grams of lysine and the

vitamins so he said so I went up to six

grams a day of lysine six grams of

vitamin C and now I’m continuing

chopping down the cupping of the tree

and painting the house and now a couple

of years later he’s still in fine health

and so I published this case history and

the another heart patient wrote to me

well I have to go into detail about her

[Music]

she suffered from stress angina

she had a television show and if she

were under stress in connection with the

television show she had to take a

nitroglycerin tablets if she climbed a

flight of stairs

her chest would hurt ins he had to take

she was taking six or seven

nitroglycerin tablets a day for several

years also she was taking vitamin C and

she said when she read the article about

the first patient she started on lysine

she has PhD in chemistry and was a

professor of chemistry in New Brunswick

University of New Brunswick in

Fredericton New Brunswick Canada and she

said within three weeks after she had

reached three grams of lysine per day

she was able

to go all day despite stressful

occurrences without taking any

nitroglycerine and that she was setting

off with her husband on a three months

trip around the world

she’s 67 years old 68 years old now so

that account was published and also

another patient’s of the nation go into

detail about who a patient who had had

to extensive bypass operations and was

told that he was in bad shape with his

arteries clogged to the coronary artery

clogged and that he was not a candidate

for another mypass operation or for

another angioplasty he was living in the

same town as the first patient and

friends told him about the first patient

so he went to see him and he said it’s

almost miraculous within a month after

he had reached five grams of lysine per

day he was riding into town from his

house somewhat out in the country

several times a week on his my cycle a

nine mile round trip and was feeling

fine no longer just waiting around for

his impending demise as the physician

said recommended him to do well I don’t

know that there’s need for a randomized

prospective double-blind control trial

when you get to evidence of this sort

about the value of large intakes of

vitamin C and also of lysine for

preventing the deposition of

atherosclerosis

and preventing death from cardiovascular

disease

I recommend that every person every

adult take three grams of vitamin C per

day and smaller amounts for children

proportional to body weight that every

person who is at risk for one reason or

another from heart disease a take

perhaps not only the vitamin C fiber six grams and vitamin C per day but also two grams or more of lysine per day 2 grams may well be effective prophylactically for people who have not had heart attacks but larger amounts might be needed for people who are at greater risk for cardiovascular disease so I believe that it should be possible at any rate in the developed countries who are prosperous enough to be able to afford the rather small amounts of money needed for the vitamin C and lysine to get

a large amount of prep electic action against cardiovascular disease and against other diseases also and an increase in the length of life the length of the period of really good health of well-being so I’m very optimistic about the future so far as cardiovascular disease Lord thank you I hope you’ve been impressed by the logic of this new approach to the treatment and prevention of cardiovascular disease it involves the addition of vitamin C and lysine supplements the lysine prevents lipoprotein a from sticking to the walls of the arteries and vitamin C helps to lower circulating levels of lipoprotein a dr. Pauling recommends three grams a vitamin C and 1 gram of lysine per day as a general preventative dose and for those with cardiovascular problems he recommends six grams of vitamin C and 3 grams of lysine both a natural constituents of food neither are unsafe even a dose is considerably higher than these levels if you do however have cardiovascular disease we recommend you carry out this advice under the guidance of your physician together with a well balanced diet and supplement program high in other antioxidant nutrients such as vitamin E and vitamin A sadly this is dr. Linus Pauling’s last contribution as he passed away in 1994 at the age of 93 not long after delivering this lecture dr. Paulin was a friend of Albert Einstein and as much as Einstein transformed physics as we know it so Pauling transformed our understanding of chemistry with the publication of his book the nature of the chemical bond in 1939 for this he received his first

Nobel Prize in the 1940s his work led to

the first synthesis of antibodies he

later discovered how anesthetics worked

which led to the development of new

anesthetic agents in the 1950s he came

close to identifying the structure of

DNA had his passport not been

confiscated by the US government

preventing him from coming to England

where access to vital data would

probably have given him the last piece

in the jigsaw he may indeed have won his

third Nobel Prize behind the scientist

was a great humanitarian who campaigned

for world peace and ways to reduce human

suffering in 1958 he presented the

United Nations with a petition signed by

11,000 and 21 top scientists from around

the world

urging an end to nuclear weapons testing

and in 1962 he was awarded the Nobel

Prize for Peace the ban on nuclear

weapons testing was effected on the day

he received his second Nobel Prize in

1965 his attention turned to the field

of nutrition and particularly the

health-promoting effects of vitamin C he

identified the role of vitamin C in

preventing many diseases from colds to

cancer thanks to him millions of people

now supplement vitamin C and a healthier

as a result I came across his work in

the late seventies and was struck by his

simple and completely logical concepts

which inspired me then a psychologist to

investigate the whole idea of disease

being the result of sub optimum

nutrition when I first met him in 1990

I knew I was in the presence of someone

very special Linus had a delightful

twinkle in his eye that was full of

wonder an open mind backed up by a

superb intelligence and encyclopedic

knowledge optimum nutrition he told me

is the medicine of the future for all

those who've been inspired by his words

we share the loss of a truly great man

whose vision has uplifted and will

continue to uplift humanity that was his

true genius

[Music]

Linus Pauling Protocol For Heart Disease.
Linus Pauling Therapy For Heart Disease.
Linus Pauling Protocol / Dr Matthias Rath / Pauling-Rath Lysine - Dr. Linus Pauling Heart Protocol , Lysine Dosage, with Dr Matthias Rath .

this is functional medicine update for

december 2009

volume 29 number 12.

this special two-part edition of fmu will be a historical overview of orthomolecular and functional medicine part one will include the birth of ortho-molecular medicine at the beginning of the last century and the bulk of part one of this issue will be an interview of dr linus pauling recorded with jeffrey bland in 1982. part two of this edition will feature a recent interview dr bland with dr abram hoffer shortly before his passing following this interview dr bland will be discussing the contributions of today’s medicine by doctors pauling hoffer and other contributing pioneers including dr roger williams dr bland’s comments will include how vitamin c functions as a therapeutic agent why nutrition is for real people and what the future holds for this new age of medicine now here is dr jeffrey bland and the

december 2009 edition

of functional medicine update

[Music]

i’d have to say this is an issue to

remember for all of us

never in the history of functional

medicine and it’s now nearly 28 years

have we had on the same issue two of the

founding fathers of the whole concept of

molecular medicine

and functional medicine you’re going to

be privileged to hear from the voices of

two of the founding fathers both

unfortunately now deceased

who have made the extraordinary

intellectual contributions to the

birthing of our field

dr linus pauling two-time nobel

prize-winning laureate

back still even today the only person to

have won two independent

nobel prizes in two different fields one

in chemistry and the other in peace

and secondly dr abram hoffer md phd

father of orthomolecular psychiatry

and obviously one of the extraordinary

contributors to the whole paradigm

of functional nutrition and its

relationship to

neurological activity with that as an

introduction

let me if i can pre-sage the comments

that you’re going to hear

from dr pauling in an interview that i

had the privilege of doing with him

back in the early 1980s when i was a

research associate at the linus pauling

institute of science and medicine on

sabbatical from my teaching position at

the university

this is a historical interview and i

think you’ll find it quite interesting

to get dr pauling’s take in the early

1980s on

what the status of affairs was as it

pertained to vitamin c and

ortho molecular medicine then and his

forecast of what it would be in the

future

we’ll uh wait for his own comments to

see how good a forecaster he was but i

think you’ll find it an extraordinarily

prescient

discussion to set the tone however

before we get into dr pauling’s

interview i thought we might go back and

just review

quickly the history that led up to this

extraordinary

1982 interview and later

my extraordinary privilege of

interviewing dr abram hoffer

in 2008 the

theme really derives out of the

intellectual soil

from the end of the 19th century

if you recall the end of the 19th

century in terms of the history of

science and medicine

this was a period of time that you had

people like rudolph virkow

the father of modern pathology who

started moving

into understanding the origin of disease

as a pathological based condition

and codifying in a systematic way tissue

pathology

and defining disease as entities related

to these pathologies

this was tied together with the

development of the concept

of human genetics now resurrecting

the discoveries that were made by gregor

mendel that lay dormant for a hundred

years when the church

really wasn’t too excited about the

mendelian genetics

getting well understood and it was

rediscovered by gregory bateson

in the end of the 19th century beginning

the 20th century

as a major theme in the connection with

inherited traits and how they

interrelated with charles darwin

at the same period this epic period of

time the understanding of the nature of

evolution and natural selection

all this tying together to give rise to

the birthing of what we consider the

modern concept of

the origin of disease that was seen in

the 20th century

also this was the time of origin really

of systematic organic chemistry with

emel fisher the extraordinary german

chemist that was starting to help us

understand that there wasn’t some

vitalism

in natural molecules that they were

interrelated with molecules

that could be seen in the test tube and

the work as you know a volar on

the conversion of cyanate and diurea and

ultimately the recognition that the

inorganic and organic world were

connected through chemistry

and this whole concept that vitalism was

being put aside in the concept of

reductionistic understanding of the

milieu of life was starting to emerge

and then as we go from there we actually

recognize that

the origin of the age of vitamins

started to emerge right at the

turn of the century with the discovery

of the

anti-berry berry factor as the eichmann

work on

thiamin as a agent that could prevent

and treat

beriberi the vite amine the substances

that were

derived vital amines from food and

of course we tie that together with eli

metchnikov working at the past year

institute who won a nobel prize in

medicine

for his discoveries about the origin of

the immune system and later

his prolongation of life concept as it

relates to the colon as the

origin of many diseases through the

alteration of the immune system

all of this was happening at the latter

portion of the 19th century it was a

epic period for setting new paradigms in

place just as the start of the 21st

century

has been a similar epic period as we

start to look at systems biology and

molecular medicine

and start to look at the influence of

various agents in the environment on

genomic expression and the

birthing of nutrigenomics neutral

proteomics nutra metabolomics and

what we call the trilogy of omics it’s

establishing a new way of looking

at the origin of dysfunction metabolic

disturbance and ultimately chronic

disease

so this period of change that occurred

at the end of the 19th century moving

into the 20th century

also was a period of time where an

extraordinary

person by the name of dr archibald

garage a third generation

medical doctor whose father was really

the person who was given credit

in discovering the first autoimmune

disease which is gout

his father crystallized on a thread put

in

a gout patient’s urine the first

crystals of uric acid which thanks to

the

birthing of organic chemistry could be

analyzed to be seen as uric acid

and from that was born the molecular

connection to the first autoimmune

disease

this would be during the middle of the

19th century

dr garage the sun archibald then took

these concepts and actually wrote the

first

textbook on autoimmune disease that was

sent in the english literature

back in the late 1800s and early 1900s

so dr montreal garage then took this

concept on even farther looking at

colored compounds in urine

this is the age of the starting of

spectroscopy and the understanding of

chromophores and

how light abstracting compounds that

gave rise to color could be used to

identify

chemical constituents and colored urine

was a very interesting

part of the application of this concept

of spectroscopy in the late 19th and

20th century

so dr garad was able to start looking at

some of these porphyrias and looking at

things that were related to

colored compounds in urine and

identified then the first genetic

metabolism diseases of infancy

that being el capitanurium and in fact

interestingly enough

his article that was published

originally in the lancet in

1902 entitled the incidence of al

capitanuria a study in chemical

individuality really was the birthing

of the whole field of molecular

uniqueness biochemical individuality and later

what we called molecular medicine which

was a term coined by

dr linus pauling and i think if you go

back and read the article by dr garad in

the lancet in 1902 you would find that

many of the things it describes are as

modern today

as they were at the turn of the last

century

i find it absolutely fascinating that

when he looks at

the concept of a genetic metabolism

disease through the lens of that period

of time and his own connection between

the chemical world and physiological and

medical world

from that emerges a platform for

understanding the origin of many

diseases that were previously not

understood at all

this is what thomas kuhn called a

paradigm shift a major

shift in thinking i quote from a part of

dr garage

landmark paper and he says quote there

are good reasons for thinking that

alcaptanuria is not the manifestation of

a disease

but is rather of the nature of an

alternative course of metabolism

harmless and usually congenital and

lifelong

witnesses born to its harmlessness by

those who have manifested this

peculiarity without any apparent

detriment to health from infancy into

adult

even into advanced age however we can

see that those individuals who excrete

excess levels of homogenic acid

these individuals have a unique aspect

of metabolism that is controlled by

aspects of their family history in quote

so from that i would suggest that he is

starting to talk very beautifully

about the nature of biochemical

individuality and how

can express itself into the phenotype

over the course

of living some things are seen in

infancy other things

are seen later in life as it relates to

these

genetic uniquenesses and what we might

consider to be a genetic defect might

actually be defined as a genetic

uniqueness requiring a specific

environment

in order to minimize the potential

adverse effects

of that uniqueness or to optimize the

positive nature of that genetic

uniqueness

i want you to recall when this was

written in 1902 this is the

age of really the development of

molecular genetics and ultimately

genetics in medicine so this was fairly

early on in bateson’s argument that we

need to look at genes and genetic

lineages

and look at these dominant recessive

characteristics that were originally

described in peas

through the work of the great monk

working in his garden

gregor mendel so from that

extraordinary soil to use the gardening

metaphor of dr garad was born then

the germination of this concept of

molecular uniqueness and

biochemical individuality as we roll the

clock the hourglass forward we’re led

then into

the middle 1900s now i’m in the 20th

century 1949

with an extraordinary back-to-back

series of two papers that appeared in

science magazine

the first is by a gentleman by the name

of james neil

in eel who is the chairman director of

the heredity clinic a laboratory of

vertebrate biology and university of

michigan

and this is a paper that appeared in the

july 15 1949 issue of science magazine

volume 110 page 64.

in which he’s talking about the

inheritance of a genetic

metabolism related disorder and that is

sickle cell anemia

and so i want you to recall the timeline

where 50 years downstream now

from where dr garage was talking about

the porphyrias and talking about

alcaptanuri and other

genetic metabolism disorders that could

be seen clinically as

altered color of urine with these

colored compounds being excreted in the

urine as a consequence of

different metabolism and some of these

urine compounds by the way didn’t

develop as colored compounds until the

urine was exposed to light because they

undergo

photochemical reactions with these

metabolites to produce conjugated

compounds that are colored so this is a

whole

interesting chapter of evolution of the

chemistry connection to

medicine and to genetics so in 1949

james neal talks about what happens in a

drop of blood from

a member of the family who has sickle

cell anemia

talking about that you get this bizarre

clumping

of the cells in the sickle or holly leaf

shape

and the ability of these erythrocytes to

sickle is a phenomena that

appears to be attended by no

pathological consequences in the

majority of these

individuals until and i want to

emphasize

they’re thrust into some kind of an

unusual environment this could be stress

sleep deprivation dehydration physical

trauma infection and then at that point

of stress

this characteristic this genetic

tendency for these

blood cells to pack in these unusual

ways these sickling configurations

now can result in a pathological outcome

that can be

multi-organ involvement it can be

affecting the heart the circulatory

system the musculature the liver

the kidneys so now you get a multiple

organ influence from a biochemical

uniqueness

that’s encoded in the genes as

individuals who’s

triggered into this pathological state

by environmental factors so here’s our

genes and environment

connection that’s starting to emerge

through the concept of sickle cell

anemia and we recognize these are

inherited

susceptibility factors it doesn’t mean

that a person who has these genes for

sickling

situations will necessarily be in crisis

what it means is they have

increased susceptibility to certain

environmental factors

well from that interesting paper

published in 1949 the companion paper

that followed it

is to me one of the most dramatic aha

papers that’s appeared in the literature

and it comes from the pan of dr

linus pauling working with his

postdoctoral student dr harvey

etano and this article is entitled

sickle cell anemia

a molecular disease and this is the

first time as far as i know that

the term molecular disease was used in

the english-speaking literature

following on for marchable garage work

really that had been done

way back when at the turn of the 20th

century and in this particular

case dr pauling then a professor at

california institute of technology

developed an extraordinary way of

looking at these sickling

cells being a chemist he looked at the

uniqueness of these red cells and said

what do they have in them that other

cells don’t have and of course all of us

know that

they have hemoglobin and hemoglobin is

an iron porphyrin

molecule and iron is a ferromagnetic

element it has

effects in magnetic fields and so he was

able to demonstrate that there were

different spin states of the iron and

hemoglobin in the

sickle cells versus that that were in

the normal red cells

and by utilizing a very interesting way

of evaluating

the effective cells by a magnetic field

he was able to start differentiating

cells that would be

sickled versus those not sickled and

start looking at

the actual chemistry of how this whole

process of altered hemoglobin

was formed in the sickle cell individual and eventually because he was also a

protein

chemist and very interested in structure

function able

to isolate and analyze the protein

structure the beta globulin molecule of

hemoglobin

and found that there was a single cell

substitution mutation

and as a consequence of this mutation of

one amino acid for another

that single change in this large chain

of amino acids

was at a critical point of the structure

of that protein

causing that globular protein as part of

the hemoglobin molecule to then

change the whole structure of hemoglobin

to make it more able to be packed into

this configuration that led to sickling

and ultimately distorting the shape of

the whole red cell now it looks like a

sickle and it cuts its way

through the vasculature causing

pathology when it starts packing

together

so this concept that a single amino acid change caused by a single gene

alteration could lead then into a very

serious series of crises and diseases

that cut across multiple organs

for which he called this a molecular

disease was a major paradigm shift

in thinking about the origin of disease

recall if you would

the major theme about the origin of

disease to that point was infectious

disease and that was a major obviously

breakthrough in understanding the origin

of disease at the turn of the last

century with louis pasteur and others

who had really helped us to understand

that certain bugs can cause disease

through

this process of infection and in the

relationship with the immune system and

so forth

so from that was later than born this

additional concept of the origin of

disease this genetic metabolism disease

where genes

in environment interrelate to give rise

to the expression

of an outcome in the phenotype called a

disease in this case

a sickling crisis so this follows on

nicely this intellectual

lineage from that of the soil that was

first

prepared by archibald garage

in that same period of time in the 1949

period of time just to show you how

there’s consanguous

concepts of discovery that occur in

great epic periods

another well-known figure the member

that we would consider one of the

founding fathers

of functional medicine was doing his

work and this is dr roger williams

who at the time was working

as a faculty member at the clayton

foundation for research

in the chemistry department university

of texas where he later was department

chairman

in austin texas and was an esteemed

biochemist and actually

credited with discovering panathinic

acid and was one of those

people who was considered at the top of

his game

in fact had been the president of the

american chemical society the

professional society for chemists in the

united states and in the same period of

time that dr pauling is writing his

paper with dr atano on sickle cell

anemia molecular disease this whole

concept of

genetic uniqueness is giving rise to

single changes in proteins that give

rise to the expression under certain

environmental

conditions of disease dr williams was

then

developing his concept of genetotrophic

disease

and genetic trophic disease is an

extraordinary concept that at the time i

believe

published in 1950 for the first time in

the lancet

once again the lance says this was

february 11th of 1950

a classic article and what he goes on to

say

is that this theme of disease occurring

as a consequence of genetic uniqueness

and certain nutritional insufficiencies

was

another part of this paradigm shifting

discovery

and i quote from his paper he says based

essentially upon recent findings in

genetics and biochemistry which have not

yet been incorporated into medical

thought

the concept of genetic trophic disease

may

we believe lead to an understanding of

many diseases

whose etiology is at present obscure end

quote

now what is this concept of

genetotrophic disease well

this is the concept that we each have

genetic

uniqueness for many things one of which

is the need for specific nutrients

to promote proper functional physiology

and if in fact those needs that we each

individually have

based on our genetics is not met then

the result could be metabolism

which over time can lead to disease

and this is very interesting if you

think about it for a moment because it

almost goes back to

h p heim’s work and his work which is

also published

in the middle 1900s you recall he is the

head of the endocrinology department

university of london school of medicine

very highly esteemed

director of medical research in england

at the time

he is credited as discovering metabolic

syndrome and insulin resistance

he went on to say the history of modern

knowledge

is concerned in no small degree with

man’s attempt to escape

from his previous concepts in quote

that’s when he was talking about

insulin resistance and hyperinsulinemia

as a different form of diabetes than

that of just frank

insulin deficiency what we now later to

be called type 1 diabetes

so again he said the history of modern

knowledge is concerned in no small way

with man’s attempt to escape from his

previous concepts

because he had a hard time getting his

colleagues to understand there could be

a second type of diabetes that was

associated not with the deficiency of

insulin

but an insufficiency of insulin

promoting proper signaling or proper

function

so all of this was occurring at the same

time and in fact williams quote times

worth when he talks about

the paradigm shifting concept of a

genetotrophic disease

in this fantastic article that appeared

in the lancet in 1950

and in fact he even goes on in this

article to talk about

etiology of diseases like heart disease

diabetes and arthritis and

other conditions like alcoholism having

their root origin

in genetic uniqueness and nutritional

insufficiency based upon

the individual’s own uniqueness that is

not being met

by their nutritional intake in fact in

this 1950 article

dr williams also goes on to talk about

mental disease and various types of

things like schizophrenia may be a

result of the inadequacy of specific

nutrients to the genetic need of that

individual

and he says and i quote there is a

prodigious amount of data to indicate

combined genetic and nutritional

influences in many forms of mental

disease

that an entire volume might be written

on this topic alone

for many years it’s been seen that there

are

forms of dementia and other nutritional

associated

symptoms of mental illness that could be

tracked back to genetics

not being adequately supported by proper

nutrition end quote

so i think that we’re witnessing now in

the 21st century a revisiting a

re-discovery

of these paradigms that were developed

really

from the work of people like archibald

garage

and later dr pauling and dr williams in

fact

dr williams takes this concept of

genetropic disease onto an even

more descriptive level in a wonderful

review article that he authored in

nutrition reviews

actually this is in september of 1950

this is volume 8 early on

in the first publications of nutrition

reviews

in which he talks about the

extraordinary research that’s in the

literature

that he believes supports the concepts

of genetic uniqueness and what he later

called biochemical individuality

that takes us up then to 1968. in 1968

is an epic landmark

period in the history of our field and

this whole nature of functional medicine

because it was that year that dr linus

pauling authored what i consider to be

one of

the great papers that sat in the

literature for many years probably

not understood as well as it should in

terms of its impact on the future

trajectory of medicine and this again

appeared in science magazine

april 19 1968 entitled orthomolecular

psychiatry

varying the concentration of substances

normally present in the human body may

control

mental disease was the subtitle of this

particular epic paper

and in this paper dr pauline talks

really at the next level from that of dr

williams in genotrophic disease about

optimizing molecular concentrations of

what he called ortho-molecular

substances

substances are native to the human body

and how that then

influences enzyme function and how that

enzyme function controls and regulates

cellular

activity in the phenotype of the

individual and how individuals with

unique genetics might have enzymes that

are slightly different in their

structure and function

from that of other individuals and

therefore their need for coenzymes

to promote proper enzyme function may be slightly higher this leads to the

ortho molecular supplementation concept

not that they’re getting super ordinary

amounts of supplements but they’re

getting the level of nutrients necessary

under their unique genes

to promote proper enzyme function this

is the application of

le chatelier’s principle remember the

french chemist that died during the

french revolution whose concept was you

apply stress to an equilibrium

and the equilibrium moves in the

direction to minimize the stress that’s

kind of a metaphor isn’t it to the

french revolution

but anyway the chemistry outcome of that

is you add more of your substrate

and you push that then through the

equilibrium dynamics onto more product

and in this case increasing the activity

and amount of a cofactor or coenzyme can

promote more

of the apoenzyme becoming the halo

enzyme the active enzyme

that then catalyzes that specific

reaction and this is the basis for

things like the use of more b12 at

hundreds of times the rdi for

megaloblastic anemia or

for the use of more b6 and folate for

people with homocystemia

this is the specific applications of

these conceptual framework that dr

pauling was speaking to

you can’t change the genes but you can

change the environment

that would then promote proper enzyme

function

this concept that is described in

orthomolecular psychiatry this

landmark paper then leads us into a

period of

nearly 40 years of debate and

controversy and

up and down and you know what does this

really mean and it

really led us into a moment in time that

i think

is one of those aha moments which was

the publication in 2002

of a review paper by bruce ames and elon

elsin schwab and eli silver this paper

appeared in the american journal of

clinical nutrition

volume 75 page 616 in 2002

and the title of this paper is high-dose

vitamin therapy stimulating variant

enzymes with decreased coenzyme binding

affinity relevance to genetic disease

and polymorphisms

this is the review paper that was

necessary to be written by a scholar

such as dr

ames an icon in the field to help to

support

this whole lineage of the development of

this theme

since archibald garage to roger williams

and into linus pauling

in this review paper which has 377

references dr ames and his co-authors do

a brilliant job of

really supporting this concept of

genetotrophic disease ortho molecular

medicine

and molecular medicine as it pertains to

the role that nutritional supplements

can have

in specific cases for promoting proper

function

in fact in this paper he goes on to say

as many as one-third of mutations in the

gene result in the corresponding enzyme

having an

increased michaelis constant this means

decreased binding affinity

for its respective coenzyme which is

generally a vitamin derived

this results in a lower rate of reaction

about 50 human genetic diseases due to

defective enzymes can be remediated or

ameliorated by the administration he

says of high

doses of vitamin components of the

corresponding coenzyme

which at least partially restores

enzymatic activity

he then talks about single nucleotide

polymorphisms in which the varying amino

acid reduces coenzyme binding

and thus enzymatic activity and these

can be remediable by raising cellular

concentrations of the cofactor the very

concept that linus pauling discussed in

1968

in his science article he goes on to

talk about many many examples of this

and many

applications of this clinically that

have been proven in the literature

and with 377 references anyone that says

there’s no science

needs to do their homework so that leads

us now into the 21st century with this

whole development of nutrigenomics and

neutral proteomics and nutra

metabolomics and how this then really

relates to individual need for nutrients

to promote individual function it ties

to the vitamin c

controversy it ties to all the things

that we have seen debated including the

niacin and schizophrenia controversy and

the

b6 and folate controversy to

homosystemia

all the things that are still being

debated today with that

let’s go to the father of this whole

concept dr elena spalling and hear what

he had to say

in 1982 hello i’m dr jeff flann i’m a

senior research fellow at the linus

pauling institute of science and

medicine and it’s a great pleasure

today to be with dr linus pauling the

chairman of the board and the chief

visionary influence on the linus pauling

institute’s activities

i’m here today to really engage in a

fireside chat with dr pauling to

discuss some of the areas of his

interest and some of his research

progress that he’s making and hopefully

acquaint you with some of the things

that are not only going on here at the

institute but

in the field of science and health care

in general so

let me thank dr pauling very much for

being with us today and for

sharing this moment of his precious time

nice to have you with us dr pauline well

thank you

i’m glad to be here i’m going to start

if i could just for the sake of the

listeners

asking you if you might review for us

some of your recent activities i know

you’ve been traveling all around

you’ve been speaking to many groups i’m

sure we’d all like to hear some of the

things that have occupied your time

well you know i divide my time it turns

out them to thirds one third of the time

i work on basic problems of

science which i’ve been interested in

for

a long time since 1922 when i carried

out my first

research so i still make

quantum mechanical calculations about

molecular structures and crystal

structure

the nature of metals and the structure

of nuclei

then one third of my time is devoted to

collaborating with other people here in

the linus polling

institute in our attack on medical

problems

right now we are just finishing up

a big study of the effectiveness of

vitamin c in controlling cancer

in mice it’s turned out i’m glad to say

that the vitamin

c has great value it slows down

greatly the development of spontaneous

breast cancer

in a strain of mice that develop

these cancers i collaborate

with many people in the institute

in their researches in considerable part

by talking with them about what they are

doing and

giving them advice perhaps or making

suggestions on the basis of my

years of experience

the job of answering letters

from people who write them for advice is

a considerable one that takes up a good

bit of my

time then the other third of my time i

travel i travel to give talks

largely about vitamins and health

or about health in general especially in

relation to

nutrition some of them about world

peace because why should i be

working on improving the health of

people if the world is going to be

destroyed in a great nuclear war we need

to have a future

to believe that we are going to have a

future that the human race will

have a future in order to justify

our trying to control cancer and heart

disease and

other diseases and of course some of the talks that i give on these

trips that i take are about science

i’d like if i could to sort of switch

the topic and ask you

you alluded to this exciting study here

at the institute that’s been ongoing for

a couple of years

as it relates to vitamin c’s impact upon

spontaneous mammary cancer

in mice and that’s but one of a number

of exciting types of work that are going

on in the institute i’m sure that our

listeners would like

to hear a little bit more about some of

the other things happening at the

institute

could you say a few words about that

well some of the investigators in the

institute are working on the question

of just what is cancer how does cancer

originate in the human body during

recent years the last 20 years

it has been possible to get information

about genetic influences

[Music]

about the role of genes which are

polynucleotides

dna strings strings of

dna molecules in causing cancer

and in achieving almost everything else

that goes on in the human

body so our investigators have

been involved in the recent

work on oncogenes

uncle genes are genes that are involved

in cancer

and they are closely related to genes

that are present

in every human being or in every animal

of the species

under study when one of these

pro-oncogenes a gene that might become a

narcogenes

undergoes a genetic mutation

it becomes an oncogene a gene

that changes the nature of the

organism in such a way that a cancer

develops or there may be some second

effect that also must occur more than

one change is usually involved in the

production of cancer

so this very modern technique of

studying

the dna molecules that determine the

nature of an individual human being

including the cancers that he might

produce is being used by workers

investigators in our institute

a different attack is being made by

dr constance sao her associates

this is to study

certain chemical substances

that are produced by oxidation

of vitamin c it was discovered

10 or 15 years ago by dr

umura well in fact by

his teacher but he who then retired and

dr omura has continued

that oxidation products of vitamin

c which are formed in the human body

after

vitamin c is ingested have greater

anti-cancer activity in animals

than vitamin c itself has

this hasn’t been followed up by anyone

there are a number of these

oxidation products different substances

that you get

by a reaction of vitamin c and oxygen

we don’t know whether all of them

have greater anti-cancer activity

than vitamin c or only one or two of

them

and we don’t understand at all how they

work in controlling cancer it may turn

out that

much of the anti-cancer activity of

vitamin c results from its

oxidation in the human body to these

oxidation products

so i have hope that this will turn out

to be a really significant effect

that will lead to an advance in our

ability to control cancer vitamin c

itself of course works in

other ways than just through the

oxidation

products it is required

for the efficient operation of the

immune system

we know that when the immune system is

functioning well

the probability of dying from cancer

is less than when the immune system is

not functioning

well after an operation for removal of

a cancer in almost every patient

there are in the bloodstream millions of

malignant cells and yet only some of

these

patients then later develop metastatic

cancer

others do not why it

is believed and i think quite rightly

that if your immune system is working

well

then that system can detect

the malignant cells prepare them for

destruction

and then carry out their destruction and

so

in the people who have a well-working

immune system

the malignant cells are destroyed and

the test disease

do not occur vitamin c is known to

potentiate

the immune system in various ways

an english investigator named balance

showed

that more antibodies

that can identify the malignant cells

are formed with a high intake of vitamin

c

then with the low intake more molecules

of complement

are formed as a result of additional

vitamin

c molecules of complement have to attach

themselves

to the complex of a malignant cell

or group of malignant cells and

antibodies

in order that these malignant cells be

destroyed

with a high intake of vitamin c you

produce more

of the t lymphocytes that can destroy

these marked malignant cells the complex

of

the antibodies complement and the

malignant itself

and it’s been known for 40 years

now more than 40 years and nearly 50

years

that vitamin c is

required in these

t lymphocytes in phagocytes and white

cells

generally in order that they be able to

destroy

infected cells and malignant cells

vitamin c

is intimately involved in the process of

protecting the human body

against infections and against

malignancies because the only way the

human body has of destroying

these infected cells in malignant cells

is with use of vitamin c

so vitamin c is important to cancer

in many ways well now

we are just embarking on a new

project that i am especially interested

in

this is vitamin c in relation to heart

disease

evidence has been turning up during

recent

years about the involvement of vitamin c

in heart disease there is

a good correlation between

incidence of heart disease and the

amount

of cholesterol in the body

and also the amount of low density

lipoprotein this low density lipoprotein

is the protein consists of molecules

that can carry

cholesterol molecules out to cells in

the body

where they are required for proper

functioning of the cells

cholesterol is a very important

substance

sometimes however the amount of

cholesterol is too great

and it gets involved in laying down

plaques in the blood vessels

there’s another protein a lipoprotein

whose molecules have the function of

picking up cholesterol and carrying it

back

to the organs where it is destroyed in

the liver converted into bile acids

that are then eliminated from the body

well vitamin c has been shown

to speed up the rate of conversion of

cholesterol to bile acids

and that means you’re bleeding off the

cholesterol so that the

level in the body goes down it has also

been shown

to cause the production of more high

density lipoprotein

that means you have more of the protein

that removes cholesterol

from the blood vessels and carries it to

the liver to be destroyed

also it cuts down slows down

the rate of production of low density

lipoprotein

so that you have a smaller number of the

molecules

that carry the cholesterol out to the

blood vessels where the plaques can be

formed

it also cuts down the amount of

triglycerides in the blood and there’s a

correlation between triglycerides and

heart attacks

so with all of these correlations we can

see

cutting down the total cholesterol the

low density lipoprotein

and the triglycerides and increasing

the high density lipoprotein and

speeding up

the rate of destruction of the

cholesterol converting it to bile acids

we can see

that vitamin c might well be correlated

in a very striking way

with heart disease a high intake of

vitamin c

may turn out to be the best way of

protecting yourself against heart

disease

our epidemiological associate

dr james emstrom

has published a paper describing a

study that he made of several hundred

people

who had been ingesting

larger amounts of vitamin c than the

population as a whole

on the average about a gram and a half

of 1500 milligrams of

vitamin c and they had

only about half the probability of dying

of

heart disease at each age

as the control population

similar subpopulations in california

who were on an ordinary diet with an

ordinary intake of

vitamin c there are other differences

between the two populations that he

compared but it seems likely that

this high intake of vitamin c is

largely responsible for their having

half as much mortality from heart

disease

age standardized age-corrected mortality

well they've had only half as much

mortality from cancer too

and from other diseases vitamin c

is not a specific

remedy a wonder drug against

cancer or against the common cold or

against the flu

or hepatitis or viral pneumonia

or herpes infections

or heart disease it’s not a

specific wonder drug what it does is to

build up the human body

to the state of health that all human

beings ought to be

in when i read what the food and

nutrition board says

that 60 milligrams of vitamin c a day

is enough for all persons in ordinary

good

health i think they should say all

persons in

ordinary poor health if you want to be

in

what ought to be ordinary good health

you have to take

additional vitamin c of course i believe

that the arguments

that support to this conclusion are

really

thoroughly convincing they are the sort

of arguments that

appeal to me as a scientist i am

accustomed to looking at the facts and

trying to draw some logical conclusions

from them

other people perhaps are not so

accustomed to doing that

i would say that the evidence that

high intake many times they usually

recommended amount the rda

of vitamin c is needed for good health

that conclusion is thoroughly justified

by the evidence

i’d like to respond and say that this

relationship between vitamin c and heart

disease is a very interesting

controversy

recently in the literature that i

believe falls right in line what you’re

talking about

that some people interpret data

differently there was a report

in the american journal of clinical

nutrition by some supposed responsible

investigators saying that vitamin c did

not

increase high density lipoprotein

cholesterol

and did not lower total cholesterol

however in examining the protocol of the

study

it was found that the average starting

cholesterol of this group

was about three-quarters the value of

the standard average american

cholesterol level meaning it was about

175 where the normal value was about 220

for the average person

and it had already been pointed out in

1976 through another series of

investigations that vitamin c is most

effective in lowering cholesterol and

raising hdl

when a person has an elevated blood

cholesterol level meaning

that the study population selected in

this study was already

almost guaranteed to show a negative

result which i found to be

something that was either naivete on the

part of the investigators or more likely

that they were trying to make a certain

political statement

through the misuse of science yes

it’s it is true that

if you want to find out what some

investigators

have observed you have to go back

and read their entire paper not just

read a

statement that someone has made even the

investigators themselves have made

about what results they have obtained

so that people are often misled

by statements that some investigators

showed

that this substance did not have any

value when in fact he had observed

some value but not so great as he had

expected to observe

or when the number of

subjects was so small that he was not

able to show

with statistical significance that there

was a positive effect

very often the mistake is made that when

an

investigator has used certain number

of subjects which might be rather small

and has failed to show benefit from the

treatment

at what is considered the statistically

significant level

the results are described as

his having shown that there was no

effect

when in fact he hadn’t shown that there

was no effect

he had just not succeeded in showing

that there was an effect

and the statistical treatment that you

give

if you’re trying to answer these two

questions

is quite different

one of the most common questions dr

pauling that the average person asks

about vitamin c therapy particularly

today in light of a lot of the

published information in the wire

service and in

magazines and newspapers is surrounding

vitamin c’s supposed toxic effects and i

think that

there are several notable reports that

have occurred in the literature lately i

know you responded

to one very responded very eloquently to a paper that appeared in seminars and

oncology recently by dr mary sustelli

who’s commented that vitamin c has toxic

effects potentially when used in cancer

therapy and you’ve also

previously responded to dr victor

herbert a hematologist who says that

vitamin c supplementation may destroy

vitamin b12 we also hear that vitamin c

supplementation supposedly causes kidney

stones through its

metabolism to oxalate and recently there

has been the report by a professor

chirluski at

oregon state university that somehow

vitamin c supplement

causes an antagonism of copper

metabolism in the body and leads to

copper deficiency anemia

i think it’d be very useful for our

listeners to sort of put this into

perspective could you comment on vitamin

c’s toxicity for us

well human beings differ from one

another

there may well be a few human beings who

should not take very large doses of

vitamin c

but they are so rare in my opinion that

it’s justified for me to say

that vitamin c is essentially completely

non-toxic some of the arguments that

have been

presented are based on a

misunderstanding

we know that the common sort of kidney

stone

has a greater tendency to form in

alkaline urine than in acidic urine but

uncommon forms have a greater tendency

to form an acidic union

when my book vitamin c and the common

cold came out it was

immediately attacked in a

publication mainly for doctors

the statement was made that vitamin c

in the form of ascorbic acid keeps the

urine acidic

and so increases the tendency to form

certain kinds of kidney stones the less

common

kinds well that is true

but it isn’t an effect of vitamin c

vitamin c is the ascorbate ion

you can’t take pure vitamin c because

you can’t

get hold of a large aggregate of

negatively charged ions there always

is a positive ion along with them and

that can be either hydrogen ion or

sodium ion

or calcium ion or some other iron

ordinary vitamin c tablets contain

ascorbic acid

which is vitamin c with hydrogen ion

and they make the urine acidic

it isn’t the vitamin c then that

increases the

tendency to form these uncommon stones

it’s the hydrogen ion

that you’re taking along with the the

scarvetion

but to keep the urine acidic decreases

the tendency to form the common stones

if you know that not many people form

stones anyway but fewer still know

what kind they might have a tendency to

form

if you happen to know that you have a

tendency to form common kidney stones

then you would be wise

to take ascorbic acid

vitamin c in the form of ascorbic acid

the common way

in which it’s available or to take some

other acidifying agent

but ascorbic acid is the best thing to

take to

cut down the chance of farming the

common kidney stones

if you know if you have farmed one of

the uncommon kind

then the doctor may well advise you to

keep the urine

alkaline you can take baking soda

as an alkalinizing agent or you can take

sodium ascorbate

and when you take sodium with scarbate

you are not only protecting yourself

to some extent against forming

additional kidney stones of that

uncommon kind

but you are also benefiting from the

vitamin c

with the oxalate stones

there may be one person described in the

medical

literature as having an oxalate stone

formed because of the large volume

amount of

vitamin c that he took that’s

possibly a real effect for that person

of the special genotype

the number of these cases is so small

that i

don’t think that is a reason not to take

vitamin c

now for some of these other statements

dr victor herbert saying that

vitamin c destroys vitamin b12 and you

may get pernicious anemia

was based on an error that he and his

associate

made when they analyze their foods

for vitamin b12 they just

didn’t use the standard procedure for

making

the analysis for vitamin b12 and when

the other investigators

repeated their work when they used

dr herbert’s method they got the same

results he had got

but when they used the standard method

they found

that practically none of vitamin b12 had

been destroyed

only a small amount of loosely bound

vitamin b12

had been destroyed so that the statement

that vitamin c can cause

pernicious anemia or b12 deficiency

anemia is just not

in accordance with the facts it was

based on an

error with the investigator in oregon

state university dr chen newski

who reported that

the copper level in the blood went down

when the subjects were given large doses

of vitamin c

the situation has been

exacerbated by a writer

in the popular newspapers who

misrepresented dr tarnowski’s work

first he said that dr chernowski took

the subjects

off the vitamin c after

60 days or whatever period in order to

protect them from

dying of anemia dr charnowski says

this just isn’t true he said that in his

paper he mentioned the possibility

that this lower copper level would lead

to an iron deficiency anemia to

failure to incorporate iron in the

red blood cells and the hemoglobin for

the red blood cells

but he didn’t think that it would occur

he just mentioned

that as as a possibility so the

scare statements that you

you’ll get anemia die of anemia if you

take large doses of vitamin c

are not justified by the statements of

the investigator himself

vitamin c improves the workings of the

human body so much

that it may well be that people will

produce

as much hemoglobin as they need even

though their copper levels are somewhat

less

than in other people or on when they are

on a smaller

intake of vitamin c so there’s no

evidence

really to support that conclusion

about vitamin c and anemia the same

thing is true for many other statements

that are made about

possible dangers of vitamin c one of

which is

that if you take large doses of vitamin

c

and then stop you’ll develop scurvy or

if a mother

pregnant woman takes large doses the

child does have to have

a special need for vitamin c

such that the child will be scorpeutic

on the

ordinary intake of vitamin c that would

not permit scurvy to

develop there just is no evidence to

support this there is a rebound effect

which in fact was discovered 10 years

ago by my associates

and me it’s a rebound effect that occurs

after you’ve been taking large doses of

vitamin c and stopped suddenly

the level in the blood goes below that

corresponding

to the ordinary low intake and it stays

low

for a few days i recommend that people

taper off

if they want to stop a large dose

instead of stopping

but dr

anderson in toronto

carried out a study in which he checked

whether people have increased

probability of developing the common

cold respiratory

illness during this period after they’ve

stopped a large intake

then they have ordinarily on ordinary

low intake

and he found he couldn’t detect

any increase incidence of respiratory

illness

during this period when the level in the

blood is

lower than usual so

there is an effect it’s not an

important effect nevertheless i suggest

that people should

taper off over a period of a week or two

if they have been taking large doses and

then i

say but better still don’t stop the

large doses

if you go to the hospital if a patient

goes to the hospital

a person who has been taking

supplementary vitamins

the doctor is apt to stop the

supplementary vitamins

this is wrong the doctors should be

giving

larger amounts of vitamin c and other

vitamins to patients in hospitals

you know here we are troubled about the

fact that

the cost of medical care in the united

states

is very high we’re spending hundreds of

billions of dollars on

medical care hospital care six

seven eight hundred dollars a day for

patients in the hospital

it’s been known for 40 years that you

can cut down the length of stay in the

hospital

by two or three or four days or by 30 or

40 or 50 percent for a longer stay

if the patient receives large amounts of

vitamin c

after a surgical operation the wounds

heal

faster with vitamin c

it’s been known for about 50 years that

vitamin c

is required for wound healing you can’t

manufacture

collagen connective tissue scar tissue

you just can’t heal wounds if you don’t

have vitamin c

when a person not getting vitamin c

begins to die of scurvy if he has an old

scar

it’s apt to break open again because

he’s

not manufacturing collagen and in fact

his joints fall apart his blood vessels

burst because he’s not making the

collagen

which is required for the strength of

these organs and

tissues and vitamin c is needed

absolutely needed

to make collagen so your body

is stronger when you take vitamin c

now about what my associates are doing

dr cameron when he first gave

large doses of vitamin c to terminal

cancer patients

in scotland and he deserves credit for

having discovered

by his clinical observations that

vitamin c

really has value for cancer patients

one of the things that dr cameron

noticed was that

the patient said doctor i feel so strong

they not only didn’t feel sick have this

tacxia just feeling miserable it’s

characteristic of cancer

and not only developed good appetites

instead of being anorectic not

able to eat because of who didn’t taste

good but they also got strong

dr cameron wondered what can vitamin c

be doing

that makes the patient say that they

feel strong

and they were strong he mentions that

one of his patients

in scotland liked to play golf was able

to lower his golf score

after he got out of the hospital and

another

retired man took on the job of chopping

wood not as a job but just

because he liked doing it he felt strong

and he

brought chopped wood around to dr

cameron and other

people also cameron noticed

that in the accounts of scurvy when

sailors used to die

on ships with scurvy the first

sign of the scurvy was latitude and

lack of muscular strength and then the

body began

falling apart later the gums ulcerated

and the teeth

fell out and the joints and so on and

the person died

well what about this lack of muscular

strength

and regaining strength in cameron’s

patient

there’s a simple chemical substance

named carnitine which is present in

muscle juice to the extent of about one

percent if you squeeze

meat the juice that you get out contains

carnitine

carnitine is required for muscular

activity you know you burn fuel

in the body to provide the energy for

muscular work and this is burned in the

cells and the muscle

the fuel that you burn is fat at least

one of the fuels carnitine is required

to carry

molecules of fat into these cells where

they can be

burned to provide muscular energy

just a couple of years ago a biochemist

showed

that carnitine can be made from lysine

an amino acid present in the body and

present in meat to lysine

by chemical reactions that take place in

the human body catalyzed by certain

enzymes

two of which are hydroxylation reactions

that require vitamin c

you can’t make carnitine from lysine

without

vitamin c the fact that

people sometimes say i have to eat red

meat to be strong

may be that they are getting carnitine

from the meat

and that helps them to be strong

or also getting lysine which is present

in larger amounts in

meat protein than in vegetable protein

and if they have enough vitamin c they

can convert the lysine

to carnitine and thus have

even greater muscular strength

so one of the investigations that we’re

carrying out as a result of

the various observations by dr

cameron and by others is to study

human beings how much carnitine

is in their bodies how much is floating

around in the blood

and if you give a person extra

lysine and extra vitamin c

does he then produce more carnitine and

become stronger too dr paulie one of the

other very commonly asked

questions surrounding vitamin c’s use in

supplemental doses has to do with

another

antioxidant knowing that vitamin c is

considered a biological antioxidant that

works in the water soluble portion of

cells

this other antioxidant is the trace

element selenium which is receiving

quite a bit of attention recently

because it’s supposedly a

cancer preventive nutrient it’s been

suggested by dr walter mertz at the usda

that high dose vitamin c therapy

antagonizes selenium

status or at least prevents selenium

absorption from the diet do you have any

comments on that relationship

well i’m not sure that my comments are

as significant as those that you would

make i

would think that selling the

tercellonite

might well be reduced to elementary

selenium

by ascorbate that selenium

in an organic molecule such as saline

methionine or

some other organic compound would

probably not be affected by the

ascorbate

but i’d be interested to know your

opinion on this point

i concur with your comment in fact the

paper

in which the oxidation reduction

relationships between

inorganic selenium and selenite solenoid

and selenium acid and vitamin c and the

organo selenium

as similar methionine selenium cysteine

confirmed exactly what you just pointed

out and that is that

there was not a reduction in the organic

forms of selenium to selenium metal

where there was in the inorganic

selenite cylinate form so it would seem

to me that if you were supplementing

with a sodium selenite preparation and

taking high-dose vitamin c

that you may render some of the selenium

unabsorbable but if you were taking the

organically bound form it would be

a very small probability reaction yeah

and of course

in the organically bound form

probably is selenium minus one already

as far

reduced as possible so that the scarbate

couldn’t reduce it any pretty

exactly right one of the other things

quickly that you might want to comment

on is the

suggestion that you can utilize a

fat soluble form of ascorbate called a

scorbial palmitate where the ascorbic

acid molecule

is esterified to palmitic acid and that

this is supposedly

a very useful antioxidant in the fat

soluble milieu of cells that

you should be taking a supplement of a

scorpio palmitate you

have any comment on that i

would need to be convinced

that that that soluble form of a scar

bait if we are taking enough

of the fat soluble antioxidant vitamin e

so my recommendation would be to spend

your money

on vitamin e and save money by buying

the cheap form of vitamin c

rather than to buy a more expensive form

of vitamin c moreover i don’t think

anyone should rely entirely

on this fat soluble form it might be

taken as an

adjunct to a good amount of

scarbates itself ascorbic acid or sodium

scarbate or calcium ascorbate itself

what dosage level would be considered

for the average consumer who

is reasonably well let’s say not sick

what dosage level of vitamin c would be

considered at a range that they would

have concern about excessive intake is

there some

range that we might say for the average

person would be in the desirable range

well vitamin c isn’t very expensive

what i buy costs about a cent and a half

a gram the ascorbic acid crystals and

the one gram tablets you can get for

around three cents

a tablet three cents a gram so it isn’t

very

expensive my 12 grams a day

comes to about 18 cents a day

nevertheless people may not want to

spend too much money on vitamins

i say a little extra vitamin c does a

lot of good

to take even 250 or 500 milligrams

that’s a lot of good to take a thousand

milligrams

a day does more good to take

five thousand ten thousand milligrams

still more good but

in general i don’t complain about a

person’s

telling me that he take two thousand

milligrams a day

as people get older i think it would be

wise for them

to increase the intake i’ve already

mentioned i think

the 12 grams 12 000 milligrams that i

take is probably the right physiological

amount

you can get along pretty well with a

somewhat smaller amount i think that’s

the right one

now a person can find his own

upper limit from the gastrointestinal

response

that was observed 10 years ago by dr

cameron and more recently by dr cathcart

dr cameron observed that a sick person

can take much larger amounts of vitamin

c

by mouth without its acting

as a laxative or having too much of a

laxative effect

producing looseness of the bowel then

the same person when he gets well

consequently it might be good for a

person to

find out what his gastrointestinal limit

is and if it’s unusually high it may

well mean

that he has a special need for

vitamin c that he is really not in the

best of health

i can take only about 12 grams a day

well i could take more if i split it up

into a succession of small doses

but not much more some people can take

20 or 30 grams a day before they get

this response even though they consider

that they are in good

health a really sick person dr cathcart

reported

might have to take as much as 200 grams

in a day to get this response

but he can’t do that day after day

in a few days he’s well if he has

mononucleosis or hepatitis

some such disease and has had to cut

down his

intake this man who comes to see me

every few months

the chemist down in san jose still has

metastatic cancer and it’s clear that he

is not well both because you can see the

metastases when he has cat scans

made also because he can take his 130

grams a day

without having far too much looseness of

the mouth

so he’s not well he’s able to work to

stay alive

now for eight years but he hasn’t been

able to

get rid of the cancer and get back into

good health some people do

apparently succeed in that

i know that the listeners would probably

like this to go on

indefinitely but we certainly have to

recognize that you have

many many other responsibilities today

and we appreciate your time i would like

however to leave

with one last question being put to you

before we have a chance to get together

to do this in the future

and that is i think a lot of people

see the rate of change of information

occurring and the how

quickly science is evolving and

developing and we all probably feel a

little bit of a state of overwhelm

as a visionary as a person who has been

a major contributor to the field of

science and healthcare and had

your finger on the pulse of what’s been

happening for 70 plus years

what is your vision as to what’s

occurring right now and

a future that you see for healthcare i

think that it will be recognized before

long

that the greatest contribution to

medicine

made in the last quarter of the

20th century is the recognition that

nutrition including nutritional

supplements

can be used in a far more effective way

to improve

health prevent disease and even in the

treatment of disease

usually as an adjunct to conventional

therapy

then have been possible than it had been

used in the past and in particular

i think vitamin c which is unique among

the vitamins in

two or three respects will be found to

have

very great value the estimate that i

have made

about the value of nutritional

supplements vitamin c

and some other health practices has been

increasing that is the value of my

estimate of that value has

been getting greater year after year

so that in an article that i wrote

recently i made the estimate

that in this way it should be possible

to

increase the length of the period of

well-being

and the length of life by 35 years

which would mean around 110 years as

life expectancy rather than 75

years and this i feel is desirable

there are periods in life when you were

miserable

when you were young you were miserable

at least i was miserable before

i found the proper relationship to the

world as a whole

to the opposite sex and so on i was not

happy as a child a

teenager i was miserable and i expect

that

there may well be a period of misery

associated

with the decline in health that

culminates in death

maybe that this can be shortened this

second period of misery the first i

think has got worse in the last 20 years

with the relaxation of the

social pressures on young people to

behave

that kept them from getting involved

with problems so intimately

that they’re as they are now involved so

i believe that we can then increase

the length of the period of well-being

with respect to the period of less

well-being

that is we’ll win out in this way

by being happier over a greater fraction

of our lives

than at the present

the time 2009 edition of functional

medicine update

will continue on part two this

is the end of part one

you

Linus Pauling Protocol For Heart Disease.
Linus Pauling Therapy For Heart Disease.
Linus Pauling Protocol / Dr Matthias Rath / Pauling-Rath Lysine - Dr. Linus Pauling Heart Protocol , Lysine Dosage, with Dr Matthias Rath .
this is functional medicine update for

december 2009

volume 29 number 12.

this special two-part edition of fmu

will be a historical overview of

orthomolecular and functional medicine

part one will include the birth of

ortho-molecular medicine at the

beginning of the last

century and the bulk of part one of this

issue will be an interview of dr

linus pauling recorded with jeffrey

bland

in 1982 part two of this edition will

feature a recent interview

dr bland with dr abram hoffer

shortly before his passing following

this interview dr bland will be

discussing

the contributions of today’s medicine by

doctors pauling

hoffer and other contributing pioneers

including dr roger williams

dr bland’s comments will include how

vitamin c functions

as a therapeutic agent why nutrition

is for real people and what the future

holds for this new age of medicine

now here is dr jeffrey bland and the

december 2009 edition

of functional medicine update

[Music]

i’d have to say this is an issue to

remember for all of us

never in the history of functional

medicine and it’s now nearly 28 years

have we had on the same issue two of the

founding fathers of the whole concept of

molecular medicine

and functional medicine you’re going to

be privileged to hear from the voices of

two of the founding fathers

both unfortunately now deceased who have

made

the extraordinary intellectual

contributions to the birthing of our

field

dr linus pauling two-time nobel

prize-winning laureate

back still even today the only person to

have won two

independent nobel prizes in two

different fields

one in chemistry and the other in peace

and secondly

dr abram hoffer md phd father of

orthomolecular psychiatry and

obviously one of the extraordinary

contributors to the whole paradigm

of functional nutrition and its

relationship to

neurological activity with that as an

introduction

let me if i can pre-sage the comments

that you’re going to hear from

dr pauling in an interview that i had

the privilege of doing with him

back in the early 1980s when i was a

research associate at the linus pauling

institute of science and medicine on

sabbatical from my teaching position at

the university

this is a historical interview and i

think you’ll find it quite interesting

to get dr pauling’s take in the early

1980s

on what the status of affairs was as it

pertained to vitamin c and

ortho molecular medicine then and his

forecast of what it would be in the

future

we’ll uh wait for his own comments to

see how good a forecaster he was but i

think you’ll find it an extraordinarily

prescient

discussion to set the tone however

before we get into dr pauling’s

interview i thought we might go back and

just review

quickly the history that led up to this

extraordinary 1982

interview and later my extraordinary

privilege of interviewing dr abram

hoffer

in 2008 the

theme really derives out of the

intellectual soil

from the end of the 19th century

if you recall the end of the 19th

century in terms of the history of

science and medicine

this was a period of time that you had

people like rudolf virkow

the father of modern pathology who

started moving

into understanding the origin of disease

as a pathological based condition

and codifying in a systematic way

tissue pathology and defining disease as

entities

related to these pathologies this was

tied together with the development of

the concept

of human genetics now resurrecting

the discoveries that were made by gregor mendel that lay dormant for a hundred

years when the church

really wasn’t too excited about the

mendelian genetics

getting well understood and it was

rediscovered by gregory bateson

in the end of the 19th century beginning

the 20th century

as a major theme in the connection with

inherited traits and how that

interrelated with

charles darwin at the same period this

epic period of time

the understanding of the nature of

evolution and natural selection

all this tying together to give rise to

the birthing of what we consider the

modern concept of

the origin of disease that was seen in

the 20th century

also this was the time of origin really

of systematic organic chemistry with

ammo fisher the

extraordinary german chemist that was

starting to help us understand

that there wasn’t some vitalism in

natural

molecules that they were interrelated

with molecules

that could be seen in the test tube and

the work as you know a volar

on the conversion of cyanate and urea

and ultimately the recognition that the

inorganic and organic world were

connected through chemistry

and this whole concept that vitalism was

being put aside in the concept of

reductionistic understanding of the

milieu of life was starting to emerge

and then as we go from there we actually

recognize that the

origin of the age of vitamins started to

emerge right at the

turn of the century with the discovery

of the

anti-very berry factor as the eichmann

work on

thiamin as a agent that could prevent

and treat

berry berry the vite amine the

substances that were

derived vital amines from food and of

course

we tie that together with eli metchnikov

working at the past year institute who

won a nobel prize in medicine

for his discoveries about the origin of

the immune system and later

his prolongation of life concept as it

relates to

the colon as the origin of many diseases

through the alteration of the immune

system all of this was happening

at the latter portion of the 19th

century it was a epic period

for setting new paradigms in place just

as the start of the 21st century

has been a similar epic period as we

start to look at systems biology and

molecular medicine and

start to look at the influence of

various agents in the environment on

genomic expression and the birthing

of nutrigenomics neutral proteomics

neutral metabolomics and

what we call the trilogy of omics it’s

establishing a new way of looking

at the origin of dysfunction metabolic

disturbance and ultimately chronic

disease

so this period of change that occurred

at the end of the 19th century moving

into the 20th century

also was a period of time where an

extraordinary

person by the name of dr archibald

garrod a third generation

medical doctor whose father was really

the person who

was given credit in discovering the

first autoimmune disease

which is gout his father crystallized on

a thread

put in a gout patient’s urine the first

crystals of

uric acid which thanks to the birthing

of organic chemistry could be analyzed

to be seen as uric acid

and from that was born the molecular

connection to the first autoimmune

disease

this would be during the middle of the

19th century

dr garad the son archibald then took

these concepts and actually wrote the

first

textbook on autoimmune disease that was

sent in the english literature

back in the late 1800s and early 1900s

so doctor montreal garage then took this concept on

even farther looking at colored

compounds in urine this is the

age of the starting of spectroscopy and

the understanding of chromophores and

how

light abstracting compounds that gave

rise to color could be used to identify

chemical constituents and colored urine

was a very interesting

part of the application of this concept

of spectroscopy in the late 19th and

20th century

so dr garad was able to start looking at

some of these porphyrias and looking at

things that were related to

colored compounds in urine and

identified then the first genetic

metabolism diseases of infancy

that being el capitanurium and in fact

interestingly enough

his article that was published

originally in the lancet in

1902 entitled the incidents of al

capitanuria study in chemical

individuality really was the birthing

of the whole field of molecular

uniqueness biochemical individuality and

later what we called molecular medicine

which was a term coined by

dr linus pauling and i think if you go

back and read the article by dr gerard

in the lancet in 1902

you would find that many of the things

it describes are as modern today

as they were at the turn of the last

century

i find it absolutely fascinating that

when he looks at the concept of a

genetic metabolism disease

through the lens of that period of time

and his own connection between the

chemical world and physiological and

medical world

from that emerges a platform for

understanding the origin of many

diseases that were previously not

understood at all

this is what thomas kuhn called a

paradigm shift a major

shift in thinking i quote from a part of

dr garage

landmark paper and he says quote there

are good reasons for thinking

that alcaptanuria is not the

manifestation of a disease

but is rather of the nature of an

alternative course of metabolism

harmless and usually congenital and

lifelong

witnesses born to its harmlessness by

those who have manifested this

peculiarity without any apparent

detriment to health from infancy into

adult

even into advanced age however we can

see that those individuals who excrete

excess levels of homogenic acid

these individuals have a unique aspect

of metabolism that is controlled by

aspects of their family history in quote

so from that i would suggest that he is

starting to talk

very beautifully about the nature of

biochemical individuality and how can

express itself

into the phenotype over the course of

living some things are seen in infancy

other things are seen later in life as

it relates to

these genetic uniquenesses and what we

might consider to be a genetic defect

might actually be defined as a genetic

uniqueness

requiring a specific environment in

order to minimize the potential

adverse effects of that uniqueness or to

optimize

the positive nature of that genetic

uniqueness

i want you to recall when this was

written in 1902 this is the

age of really the development of

molecular genetics

and ultimately genetics and medicine so

this was fairly early on in bateson’s

argument that we need to look at genes

and genetic lineages

and look at these dominant recessive

characteristics that were originally

described in peas

through the work of the great monk

working in his garden

gregor mendel so from that

extraordinary soil to use the gardening

metaphor

of dr garad was born then the

germination

of this concept of molecular uniqueness

and biochemical individuality

as we roll the clock that hourglass

forward

we’re led then into the middle 1900s

now i’m in the 20th century 1949

with an extraordinary back-to-back

series of two papers that appeared in

science magazine

the first is by a gentleman by the name

of james neal

in eel who was the chairman director of

the heredity clinic a laboratory of

vertebrate and biology and university of

michigan

and this is a paper that appeared in the

july 15 1949 issue of science magazine

volume 110 page 64

in which he’s talking about the

inheritance of a

genetic metabolism related disorder and

that is sickle cell anemia

and so i want you to recall the timeline

we’re 50 years downstream now

from where dr garage was talking about

the porphyrias and talking about al

capitanuri and other

genetic metabolism disorders that could

be seen clinically as altered color of

urine

with these colored compounds being

excreted in the urine as a consequence

of

different metabolism and some of these

urine compounds by the way didn’t

develop

as colored compounds until the urine was

exposed to light because they undergo

photochemical reactions with these

metabolites to produce conjugated

compounds that are colored so this is a

whole

interesting chapter of evolution of the

chemistry connection

to medicine and to genetics so in 1949

james neal talks about what happens in a

drop of blood from

a member of the family who has sickle

cell anemia

talking about that you get this bizarre

clumping

of the cells in the sickle or holly leaf

shape and the ability of these

erythrocytes to sickle

is a phenomena that appears to be

attended by no

pathological consequences in the

majority of these individuals until

and i want to emphasize they’re thrust

into some kind of an unusual environment

this could be stress

sleep deprivation dehydration physical

trauma infection and then at that point

of stress

this characteristic this genetic

tendency for these

blood cells to pack in these unusual

ways these sickling configurations

now can result in a pathological outcome

that can be

multi-organ involvement it can be

affecting the heart the circulatory

system the musculature the liver

the kidneys so now you get a multiple

organ

influence from a biochemical uniqueness

that’s

encoded in the genes as individuals

who’s triggered

into this pathological state by

environmental factors so here’s our

genes and environment

connection that’s starting to emerge

through the concept of sickle cell

anemia and we recognize these are

inherited

susceptibility factors it doesn’t mean

that a person who has these genes for

sickling

situations will necessarily be in crisis

what it means is they have

increased susceptibility to certain

environmental factors

well from that interesting paper

published in 1949 the companion paper

that followed it

is to me one of the most dramatic aha

papers that’s appeared in the literature

and it comes from the pan of dr

linus pauling working with his

postdoctoral student dr harvey

itano and this article is entitled

sickle cell anemia

a molecular disease and this is the

first time as far as i know that

the term molecular disease was used in

the english-speaking literature

following on from archibald garage work

really that had been done

way back when at the turn of the 20th

century and in this particular

case dr pauling then a professor at

california institute of technology

developed an extraordinary way of

looking at these sickling cells

being a chemist he looked at the

uniqueness of these red cells and said

what do they have in them that other

cells don’t have and of course all of us

know that

they have hemoglobin and hemoglobin is

an iron porphyrin

molecule and iron is a ferromagnetic

element

it has effects in magnetic fields and so

he was able to demonstrate that there

were different spin states of the iron

and hemoglobin

in the sickle cells versus that that

were in the normal red cells

and by utilizing a very interesting way

of evaluating

the effective cells by a magnetic field

he was able to start differentiating

cells that would be

sickled versus those not sickled and

start looking at

the actual chemistry of how this whole

process of altered hemoglobin

was formed in the sickle cell individual

and eventually because he was also a

protein

chemist and very interested in structure

function

able to isolate it and analyze the

protein structure the beta globulin

molecule of hemoglobin

and found that there was a single cell

substitution mutation

and as a consequence of this mutation of

one amino acid for another

that single change in this large chain

of amino acids

was at a critical point of the structure

of that protein

causing that globular protein as part of

the hemoglobin molecule to then

change the whole structure of hemoglobin

to make it more able to be packed into

this configuration that led to sickling

and ultimately distorting the shape of

the whole red cell now it looks like a

sickle and it cuts its way

through the vasculature causing

pathology when it starts packing

together

so this concept that a single amino acid change caused by a single gene

alteration could lead then into a very

serious series of crises and diseases

that cut across

multiple organs for which he called this

a molecular disease was a major paradigm

shift

in thinking about the origin of disease

recall if you would

the major theme about the origin of

disease to that point was infectious

disease and that was a major obviously

breakthrough in understanding the origin

of disease at the turn of the last

century with louis pasteur and others

who had really helped us to understand

that certain bugs can cause disease

through

this process of infection and in the

relationship with the immune system and

so forth

so from that was later than born this

additional concept of the origin of

disease this genetic metabolism disease

where genes

in environment interrelate to give rise

to the expression

of an outcome in the phenotype called a

disease in this case a sickling

crisis so this follows on nicely this

intellectual lineage

from that of the soil that was first

prepared

by archibald garage in that same period

of time

in the 1949 period of time just to show

you how there's consanguous

concepts of discovery that occur in

great epic periods

another well-known figure the member

that we would consider one of the

founding fathers of functional medicine

was doing his work and this is dr roger

williams

who at the time was working

as a faculty member at the clayton

foundation for research

in the chemistry department university

of texas where he later was department

chairman

in austin texas and was an esteemed

biochemist and actually

credited with discovering pantothenic

acid and was one of those

people who was considered at the top of

his game

in fact had been the president of the

american chemical society the

professional society for chemist in the

united states and in the same period of

time that dr pauling is writing his

paper with dr atano

on sickle cell anemia molecular disease

this whole concept of

genetic uniqueness is giving rise to

single changes in proteins that give

rise to the expression under certain

environmental conditions of disease

dr williams was then developing his

concept

of genetotrophic disease and genetic

trophic disease

is an extraordinary concept that at the

time i believe published in 1950 for the

first time

in the lancet once again the lancet this

was february 11th of 1950

a classic article and what he goes on to

say is that this theme

of disease occurring as a consequence of

genetic uniqueness

and certain nutritional insufficiencies

was

another part of this paradigm shifting

discovery

and i quote from his paper he says based

essentially upon recent findings in

genetics and biochemistry which have not

yet been incorporated into medical

thought

the concept of genetic trophic disease

may

we believe lead to an understanding of

many diseases

whose etiology is at present obscure end

quote

now what is this concept of

genetotrophic disease well

this is the concept that we each have

genetic uniqueness

for many things one of which is the need

for specific nutrients to

promote proper functional physiology

and if in fact those needs that we each

individually have

based on our genetics is not met then

the result could be dysfunctional

metabolism

which over time can lead to disease

and this is very interesting if you

think about it for a moment because it

almost goes back to

hp heims work and his work which was

also published

in the middle 1900s you recall he is the

head of the endocrinology department

university of london school of medicine

very highly esteemed

director of medical research in england

at the time

he is credited as discovering metabolic

syndrome and insulin resistance

he went on to say the history of modern

knowledge

is concerned in no small degree with

man’s attempt to escape

from his previous concepts in quote

that’s when he was talking about

insulin resistance and hyperinsulinemia

as a different form of diabetes than

that of just frank

insulin deficiency what we now later to

be called type 1 diabetes

so again he said the history of modern

knowledge is concerned in no small way

with man’s attempt to escape from his

previous concepts

because he had a hard time getting his

colleagues to understand there could be

a second type of diabetes that was

associated not with the deficiency of

insulin

but an insufficiency of insulin

promoting proper signaling or proper

function

so all of this was occurring at the same

time and in fact williams quote times

worth when he talks about

the paradigm shifting concept of a

genetotrophic disease

in this fantastic article that appeared

in the lancet in 1950

and in fact he even goes on in this

article to talk about

etiology of diseases like heart disease

diabetes and arthritis and

other conditions like alcoholism having

their root

origin in genetic uniqueness and

nutritional insufficiency based upon

the own uniqueness that is not being met

by their nutritional intake in fact in

this 1950 article

dr williams also goes on to talk about

mental disease and various types of

things like schizophrenia may be a

result of the inadequacy of specific

nutrients

to the genetic need of that individual

and he says and i quote there is a

prodigious amount of data to indicate

combined genetic and nutritional

influences and many forms of mental

disease

that an entire volume might be written

on this topic alone

for many years it’s been seen that there

are

forms of dementia and other nutritional

associated

symptoms of mental illness that could be

tracked back to genetics

not being adequately supported by proper

nutrition end quote

so i think that we’re witnessing now in

the 21st century

a revisiting a re-discovery of these

paradigms that were

developed really from the work of people

like

archibald garage and later dr pauling

and dr williams

in fact dr williams takes this concept

of genetotrophic disease onto an even

more descriptive level in a wonderful

review article that he authored in

nutrition reviews

actually this is in september of 1950

this is

volume 8 early on in the first

publications

of nutrition reviews in which he talks

about

the extraordinary research that’s in the

literature

that he believes supports the concepts

of genetic uniqueness and what he later

called biochemical individuality

that takes us up then to 1968 in 1968 is

an epic landmark

period in the history of our field and

this whole nature of functional medicine

because it was that year that dr linus

pauling authored what i consider to be

one of

the great papers that sat in the

literature for many years probably

not understood as well as it should in

terms of its impact on the future

trajectory of medicine and this again

appeared in science magazine

april 19 1968 entitled orthomolecular

psychiatry

varying the concentration of substances

normally present in the human body may

control

mental disease was the subtitle of this

particular epic paper

and in this paper dr pauline talks

really at the next level

from that of dr williams and genotrophic

disease about optimizing molecular

concentrations of what he called

orthomolecular substances substances are

native to the human body

and how that then influences enzyme

function and how that enzyme function

controls and regulates cellular

activity in the phenotype of the

individual and how individuals with

unique genetics might have enzymes that

are slightly different in their

structure and function

from that of other individuals and

therefore their need for coenzymes

to promote proper enzyme function may be

slightly higher this leads to the

ortho molecular supplementation concept

not that they’re getting super ordinary

amounts of supplements but they’re

getting the level of nutrients necessary

under their unique genes to promote

proper enzyme function

this is the application of le

chatelier’s principle remember the

french chemist that died during the

french revolution whose concept was you

apply stress to an equilibrium

and the equilibrium moves in the

direction to minimize the stress that’s

kind of a metaphor isn’t it to the

french revolution

but anyway the chemistry outcome of that

is you add more of your substrate

and you push that then through the

equilibrium dynamics onto more product

and in this case increasing the activity

and amount of a cofactor or coenzyme can

promote more

of the apoenzyme becoming the halo

enzyme the active enzyme

that then catalyzes that specific

reaction and this is the basis for

things like the use of more b12 at

hundreds of times the rdi for

megaloblastic anemia or

for the use of more b6 and folate for

people with homosystemia

this is the specific applications of

these conceptual framework that dr

pauling was speaking to

you can’t change the genes but you can

change the environment

that would then promote proper enzyme

function

this concept that is described in

ortho-molecular psychiatry this

landmark paper then leads us into a

period of

nearly 40 years of debate and

controversy and

up and down and you know what does this

really mean and it

really led us into a moment in time that

i think

is one of those aha moments which was

the publication in 2002

of a review paper by bruce ames and elon

elsin schwab and eli silver this paper

appeared in the american journal of

clinical nutrition

volume 75 page 616 in 2002

and the title of this paper is high-dose

vitamin therapy

stimulating variant enzymes with

decreased coenzyme binding

affinity relevance to genetic disease

and polymorphisms

this is the review paper that was

necessary to be written by a scholar

such as dr

ames an icon in the field to help to

support

this whole lineage of the development of

this theme since archibald garage to

roger williams and intellinus pauling

in this review paper which has 377

references dr ames and his co-authors do

a brilliant job of really supporting

this concept of genetotrophic disease

ortho molecular medicine

and molecular medicine as it pertains to

the role that nutritional supplements

can have

in specific cases for promoting proper

function

in fact in this paper he goes on to say

as many as one third of mutations in the

gene result in the corresponding enzyme

having an

increased michaelis constant this means

decreased binding affinity

for its respective coenzyme which is

generally a vitamin derived

this results in a lower rate of reaction

about 50 human genetic diseases due to

defective enzymes can be remediated or

ameliorated by the administration he

says of high

doses of vitamin components of the

corresponding coenzyme

which at least partially restores

enzymatic activity

he then talks about single nucleotide

polymorphisms in which the varying amino

acid reduces coenzyme binding

and thus enzymatic activity and these

can be remediable by raising cellular

concentrations of the cofactor the very

concept that linus pauling discussed in

1968

in his science article he goes on to

talk about many many examples of this

and many applications of this

clinically that have been proven in the

literature and with 377 references

anyone that says there’s no science

needs to do their homework so that leads

us now into the 21st century with this

whole development of nutrigenomics and

nutraproteomics and nutra metabolomics

and how this then really relates to

individual need for nutrients

to promote individual function it ties

to the vitamin c controversy

it ties to all the things that we have

seen debated including the niacin and

schizophrenia controversy and the

b6 and folate controversy to

homosystemia

all the things that are still being

debated today with that

let’s go to the father of this whole

concept dr elena’s pauling and hear what

he had to say

in 1982 hello i’m dr jeff plan i’m a

senior research fellow at the linus

pauling institute of science and

medicine and it’s a great pleasure

today to be with dr linus pauling the

chairman of the board and the chief

visionary influence on the linus pauling

institute’s activities

i’m here today to really engage in a

fireside chat with dr pauling to

discuss some of the areas of his

interest and some of his research

progress that he’s making and hopefully

acquaint you with some of the things

that are not only going on here at the

institute but

in the field of science and health care

in general so

let me thank dr pauling very much for

being with us today and for

sharing this moment of his precious time

nice to have you with us dr pauline well

thank you

i’m glad to be here i’m going to start

if i could just

for the sake of the listeners asking you

if you might review

for us some of your recent activities i

know you’ve been traveling all around

you’ve been speaking to many groups

i’m sure we’d all like to hear some of

the things that have occupied your time

well you know i divide my time it turns

out them to

thirds one third of the time

i work on basic problems of

science which i’ve been interested in

for

a long time since 1922 when i carried

out

my first research so i still

make quantum mechanical calculations

about molecular structures and crystal

structure

the nature of metals and the structure

of nuclei

then one third of my time is devoted to

collaborating with other people here in

the linus polling institute

in our attack on medical problems

right now we are just finishing up

a big study of the effectiveness of

vitamin c

in controlling cancer in mice

it’s turned out i’m glad to say that the

vitamin

c has great value it

slows down greatly the development of

spontaneous breast cancer

in a strain of mice that develop

these cancers i collaborate

with many people in the institute

in their researches in considerable part

by talking with them about what they are

doing and

giving them advice perhaps or making

suggestions on the basis of

my years of experience

the job of answering letters

from people who write them for advice is

a considerable one that takes up a good

bit of

my time then the other third of my time

i travel i travel to give

talks largely about vitamins

and health or about health in general

especially in relation to nutrition

some of them about world peace

because why should i be working

on improving the health of people if the

world is going to be

destroyed in a great nuclear war we need

to have a future

to believe that we are going to have a

future that the human race will

have a future in order to justify

our trying to control cancer and heart

disease

and other diseases and of course some of

the talks that i give on these

trips that i take are about

science i'd like if i could to sort of

switch the topic and ask you

you alluded to this exciting study here

at the institute that’s been ongoing for

a couple of years

as it relates to vitamin c’s impact upon

spontaneous mammary cancer in mice and

that’s but one of a number of exciting

types of work that are going on in the

institute i’m sure that

our listeners would like to hear a

little bit more about some of the other

things happening at the institute

could you say a few words about that

well some of the investigators in the

institute are working on the question

of just what is cancer how does cancer

originate in the human body during

recent years the last 20 years

it has been possible to get information

about genetic influences

about the role of genes which are

polynucleotides

dna strings strings of

dna molecules in causing cancer

and in achieving almost everything else

that goes on in the human

body so our investigators have

been involved in the recent

work on oncogenes

uncle genes are genes that are involved

in cancer and they are closely related

to genes that are present in every human

being or in every animal of the species

under study

when one of these pro-oncogenes

a gene that might become a nacho genes

undergoes a

genetic mutation it becomes an

oncogene a gene that changes

the nature of the organism in such

a way that a cancer develops

or there may be some second effect

that also must occur more than one

change

is usually involved in the production of

cancer

so this very modern technique of

studying the dna

molecules that determine the nature of

an

individual human being including

the cancers that he might produce

is being used by workers investigators

in our institute

a different attack is being made

by dr constance sao and her associates

this is to study

certain chemical substances

that are produced by oxidation

of vitamin c it was discovered

10 or 15 years ago by dr

umura well in fact by

his teacher but he who then retired and

dr omura has continued

that oxidation products of vitamin c

which are formed in the human body after

vitamin c

is ingested have greater anti-cancer

activity in animals than vitamin c

itself has this hasn't been followed up

by anyone

there are a number of these oxidation

products

different substances that you get by

a reaction of vitamin c and oxygen

we don't know whether all of them

have greater anti-cancer activity than

vitamin c

or only one or two of them and we don't

understand at all

how they work in controlling

cancer it may turn out that much of the

anti-cancer activity

of vitamin c results from its

oxidation in the human body to these

oxidation products

so i have hope that this will turn out

to be a really significant effect

that will lead to an advance in

our ability to control cancer

vitamin c itself of course works in

other ways

than just through the oxidation products

it is required

for the efficient operation of

the immune system we know that when the

immune system is functioning well

the probability of dying from cancer is

less than when the immune system is not

functioning

well after an operation for removal of

a cancer in almost every patient

there are in the bloodstream millions of

malignant cells and yet only some of

these

patients then later develop metastatic

cancer

others do not why

it is believed and i think quite rightly

that if your immune system is working

well

then that system can detect

the malignant cells prepare them for

destruction and then carry out their

destruction and so in the people who

have a

well-working immune system the

malignant cells are destroyed and the

test disease

do not occur vitamin c is known

to potentiate the immune system in

various ways an english investigator

named

balance showed that more

antibodies that can identify

the malignant cells are formed with a

high intake

of vitamin c then with a low intake

more molecules of complement are formed

as a result of additional vitamin c

molecules of complement have to attach

themselves

to the complex of a malignant cell

or group of malignant cells and

antibodies

in order that these malignant cells be

destroyed

with a high intake of vitamin c you

produce more

of the t lymphocytes that can destroy

these marked malignant cells the complex

of

the antibodies complement and the

malignant itself

and it’s been known for 40 years

now more than 40 years and nearly 50

years

that vitamin c is

required in these

t lymphocytes in phagocytes and white

cells

generally in order that they be able to

destroy

infected cells and malignant cells

vitamin c

is intimately involved in the process of

protecting the human body against

infections

and against malignancies

because the only way the human body has

of destroying

these infected cells in malignant cells

is with use of vitamin c

so vitamin c is important to cancer in

many ways well now

we are just embarking on a new

project that i am especially interested

in

this is vitamin c in relation to heart

disease

evidence has been turning up during

recent

years about the involvement of vitamin c

in heart disease

there is a good correlation

between incidence of heart disease

and the amount of cholesterol in the

body

and also the amount of low-density

lipoprotein this low-density lipoprotein

is the protein consists of molecules

that can carry cholesterol molecules out

to cells in the body where they are

required for

proper functioning of the cells

cholesterol is a very important

substance

sometimes however the amount of

cholesterol is too great

and it gets involved in laying down

plaques in the blood vessels

there’s another protein a lipoprotein

whose molecules have the function of

picking up cholesterol

and carrying it back to the organs where

it is

destroyed in the liver converted into

bile acids

that are then eliminated from the body

well vitamin c has been shown

to speed up the rate of conversion of

cholesterol to bile acids

and that means you’re bleeding off the

cholesterol so that the

level in the body goes down it has also

been shown

to cause the production of more high

density

lipoprotein that means you have more of

the protein that removes cholesterol

from the blood vessels and carries it to

the liver to be destroyed

also it cuts down slows down

the rate of production of low density

lipoprotein

so that you have a smaller number of the

molecules

that carry the cholesterol out to the

blood vessels where the plaques can be

formed it also cuts down the

amount of triglycerides in the blood and

there’s a correlation between

triglycerides and heart attacks so with

all of these correlations

we can see cutting down the total

cholesterol

the low density lipoprotein and the

triglycerides and

increasing the high density lipoprotein

and speeding up

the rate of destruction of the

cholesterol converting it to bile acids

we can see

that vitamin c might well be correlated

in a very striking way

with heart disease a high intake of

vitamin c

may turn out to be the best way of

protecting yourself against

heart disease our epidemiological

associate dr james

emstrom has published a paper

describing a study that he made of

several hundred

people who had been

ingesting larger amounts of vitamin c

than the population as a whole on the

average about a gram and a half

of 1500 milligrams of vitamin c

and they had only about half

the probability of dying of heart

disease

at each age as the

control population similar

subpopulations in

california who were on an ordinary diet

with an

ordinary intake of vitamin c

there are other differences between the

two

populations that he compared but it

seems likely that

this high intake of vitamin c

is largely responsible for their having

half as much mortality from heart

disease

age standardized age-corrected mortality

well they’ve had only half as much

mortality from cancer too

and from other diseases vitamin c

is not a specific

remedy a wonder drug against

cancer or against the common cold or

against the flu or

hepatitis or viral pneumonia

or herpes infections

or heart disease it’s not a

specific wonder drug what it does is to

build up the human body

to the state of health that all human

beings ought to be in

when i read what the food and nutrition

board says

that 60 milligrams of vitamin c a day

is enough for all persons in ordinary

good

health i think they should say a

person’s in ordinary poor health

if you want to be in what ought to be

ordinary good health you have to take

additional vitamin c of course i believe

that the arguments

that support to this conclusion are

really

thoroughly convincing they are the sort

of arguments that appeal to me as

a scientist i am accustomed to looking

at the facts and

trying to draw some logical conclusions

from them

other people perhaps are not so

accustomed to doing that

i would say that the evidence that

high intake many times they usually

recommended amount the rda

of vitamin c is needed for good health

that conclusion is thoroughly justified

by the evidence

i’d like to respond and say that this

relationship between vitamin c and heart

disease is a very interesting

controversy

recently in the literature that i

believe falls right in line what you’re

talking about

that some people interpret data

differently there was a report in the

american journal of clinical nutrition

by some supposed responsible

investigators saying that vitamin c did

not

increase high density lipoprotein

cholesterol

and did not lower total cholesterol

however in examining the protocol of the

study

it was found that the average starting

cholesterol of this group

was about three-quarters the value of

the standard average american

cholesterol level meaning it was about

175

where the normal value is about 220 for

the average person

and it had already been pointed out in

1976 through another series of

investigations that vitamin c is most

effective in lowering cholesterol and

raising hdl

when a person has an elevated blood

cholesterol level meaning

that the study population selected in

this study was

already almost guaranteed to show a

negative result

which i found to be something that was

either naivete on the part of the

investigators or more likely that they

were trying to make a certain political

statement through the misuse of science

yes it’s it is true

that if you want to find out what some

investigators

have observed you have to go back and

read

their entire paper not just read a

statement that someone has made even the

investigators themselves have made

about what results they have obtained

so that people are often misled

by statements that some investigators

showed

that this substance did not have any

value when in fact he had observed

some value but not so great as he had

expected to observe

or when the number of

subjects was so small that he was not

able to show

with statistical significance that there

was a positive effect

very often the mistake is made that when

an

investigator has used certain number

of subjects which might be rather small

and has failed to show benefit from the

treatment

at what is considered the statistically

significant level

the results are described as his having

shown that there was no effect

when in fact he hadn’t shown that there

was no effect

he had just not succeeded in showing

that there was an

effect and the statistical treatment

that you give if you’re trying to answer

these two questions is quite different

one of the most common questions dr

pauling that the average person asks

about vitamin c

therapy particularly today in light of a

lot of the

published information in the wire

service and in

magazines and newspapers is surrounding

vitamin c supposed toxic effects and i

think that

there are several notable reports that

have occurred in the literature lately i

know you responded

to one very responded very eloquently to

a paper that

appeared in seminars in oncology

recently by dr mary cestelli who’s

commented that vitamin c has toxic

effects potentially when used in cancer

therapy and you’ve also

previously responded to dr victor

herbert hematologist who says that

vitamin c supplementation may destroy

vitamin b12

we also hear that vitamin c

supplementation supposedly causes kidney

stones through its

metabolism to oxalate and recently there

has been the report

by a professor chirluski at oregon state

university that somehow vitamin c

supplement

causes an antagonism of copper

metabolism in the body and leads to

copper deficiency anemia

i think it’d be very useful for our

listeners to sort of put this into

perspective could you comment on vitamin

c’s toxicity for us

well human beings differ from one

another

there may well be a few human beings who

should not take very large doses of

vitamin c

but they are so rare in my opinion that

it’s for me to say

that vitamin c is essentially completely

non-toxic some of the arguments that

have been

presented are based on a

misunderstanding

we know that the common sort of kidney

stone

has a greater tendency to form in

alkaline urine than in acidic urine but

uncommon forms have a greater tendency

to

in the civic union when my book vitamin

c and the common cold came out it was

immediately attacked in a

publication mainly for doctors

the statement was made that vitamin c

in the form of ascorbic acid keeps the

urine

acidic and so increases the tendency to

form

certain kinds of kidney stones the less

common

kinds well that is true

but it isn’t an effect of vitamin c

vitamin c is the ascorbate ion

you can’t take pure vitamin c because

you can’t

get hold of a large aggregate of

negatively charged ions there always is

a positive ion along with them

and that can be either hydrogen ion or

sodium ion

or calcium ion or some other iron

ordinary vitamin c tablets contain

ascorbic acid which is

vitamin c with hydrogen ion and

they make the urine acidic it isn't the

vitamin c

then that increases the tendency to form

these

uncommon stones it's the hydrogen ion

that you're taking along with

the the scarbate ion but

to keep the urine acidic decreases the

tendency to form the common stones

if you know that not many people form

stones anyway but fewer still

know what kind they might have a

tendency to form

if you happen to know that you have a

tendency to form common kidney stones

then you would be wise

to take ascorbic acid

vitamin c in the form of ascorbic acid

the common way

in which it's available or to take some

other acidifying agent

but ascorbic acid is the best thing to

take to

cut down the chance of forming the

common kidney stones

if you know if you have farmed one of

the uncommon kind

then the doctor may well advise you to

keep the urine

alkaline you can take baking soda

as an alkalinizing agent or you can take

sodium ascorbate

and when you take sodium with scarbate

you are not only protecting yourself

to some extent against forming

additional kidney stones of that

uncommon kind

but you are also benefiting from the

vitamin c

with the oxalate stones

there may be one person described in the

medical

literature as having an oxalate stone

formed because of the large volume

amount of

vitamin c that he took that’s

possibly a real effect for that person

of the special genotype

the number of these cases is so small

that i

don’t think that is a reason not to take

vitamin c

now for some of these other statements

dr victor hibbert saying that

vitamin c destroys vitamin b12 and you

may get

pernicious anemia was based on

an error that he and his associate made

when they analyze their foods

for vitamin b12 they just didn't use

the standard procedure for making the

analysis

for vitamin b12 and when the other

investigators

repeated their work when they used

dr herbert's method they got the same

results he had got

but when they used the standard method

they found

that practically none of vitamin b12 had

been destroyed

only a small amount of loosely bound

vitamin b12

have been destroyed so that the

statement that vitamin c can cause

pernicious anemia or b12 deficiency

anemia is just not

in accordance with the facts it was

based on an

era with the investigator in the oregon

state university dr chernusky

who reported that

the copper level in the blood

went down when the subjects were given

large doses of vitamin c

the situation has been

exacerbated by a writer

in the popular newspapers who

misrepresented dr chernowski's work

first he said that dr chernowski took

the subjects off

the vitamin c after 60 days or whatever

period

in order to protect them from dying of

anemia dr charnowski says this just

isn't true he said that in his paper

he mentioned the possibility

that this lower copper level would lead

to an iron deficiency anemia to

failure to incorporate iron in the

red blood cells in the hemoglobin for

the red blood cells

but he didn't think that it would occur

he just mentioned

that as as a possibility so

the scare statements that you

you'll get anemia die of anemia if you

take large doses of vitamin c

are not justified by the statements of

the investigator himself

vitamin c improves the workings of the

human body so much

that it may well be that people will

produce

as much hemoglobin as they need even

though their copper levels are somewhat

less than in other people or on

when they are on a smaller intake of

vitamin c

so there’s no evidence really to support

that conclusion about vitamin c

and anemia the same thing is true for

many other statements that are made

about possible dangers of vitamin c

one of which is that if you take large

doses of vitamin c and then stop

you’ll develop scurvy or if a mother

pregnant woman takes large doses the

child does have to have a

special need for vitamin c such

that the child will be scorpeutic on the

ordinary intake of vitamin c that would

not permit scurvy to

develop there just is no evidence to

support this there is a rebound effect

which in fact was discovered 10 years

ago by my associates

and me it’s a rebound effect that occurs

after you’ve been taking large doses of

vitamin c

and stopped suddenly the level in the

blood goes

below that corresponding to the ordinary

low intake

and it stays low for a few days

i recommend that people taper off if

they want to stop a large dose instead

of stopping

but dr

anderson in toronto

carried out a study in which he checked

whether people have increased

probability of developing the common

cold respiratory

illness during this period after they’ve

stopped a large intake

then they have ordinarily on ordinary

low intake

and he found he couldn’t detect any

increase

incidence of respiratory illness

during this period when the

level in the blood is lower than usual

so there is an effect

it’s not an important effect

nevertheless

i suggest that people should taper off

over a period of a week or two

if they have been taking large doses and

then i

say but better still don’t stop the

large doses

if you go to the hospital if a patient

goes to the hospital

a person who’s been taking supplementary

vitamins

the doctor is apt to stop the

supplementary vitamins

this is wrong the doctors should be

giving larger amounts of vitamin c and

other vitamins to patients in hospitals

you know here we are troubled about the

fact that

the cost of medical care in the united

states

is very high we’re spending

hundreds of billions of dollars on

medical care

hospital care six seven eight hundred

dollars

a day for patients in the hospital it’s

been known for 40 years

that you can cut down the length of stay

in the hospital

by two or three or four days or by 30 or

40 or 50 percent for a longer stay

if the patient receives large amounts of

vitamin c

after a surgical operation the wounds

heal

faster with vitamin c

it’s been known for about 50 years that

vitamin c

is required for wound healing you can’t

manufacture

collagen connective tissue scar tissue

you just can’t heal wounds if you don’t

have vitamin c

when a person not getting vitamin c

begins to die of scurvy if he has an old

scar

it’s apt to break open again because

he’s

not manufacturing collagen and in fact

his joints fall apart his blood vessels

burst because he’s not making the

collagen

which is required for the strength of

these organs and tissues

and vitamin c is needed absolutely

needed

to make collagen so your body

is stronger when you take vitamin c

now about what my associates are doing

dr cameron when he first gave

large doses of vitamin c to terminal

cancer patients

in scotland and he deserves credit for

having discovered

by his clinical observations that

vitamin c

really has value for cancer patients

one of the things that dr cameron

noticed was that

the patient said doctor i feel so strong

they not only didn’t feel sick have this

tacxia just feeling miserable it’s

characteristic of cancer

and not only developed good appetites

instead of being anorectic

not able to eat because of who didn’t

taste good

but they also got strong dr cameron

wondered what can vitamin c be doing

that makes the patient say that they

feel strong

and they were strong he mentions that

one of his patients

in scotland like to play golf was able

to lower his golf score

after he got out of the hospital and

another

retired man took on the job of chopping

wood not as a job but just

because he liked doing it he felt strong

and he

brought chopped wood around to dr

cameron and other

people also cameron noticed

that in the accounts of scurvy when

sailors used to die

on ships with scurvy the first sign of

the scurvy was

latitude and lack of muscular strength

and then the body began falling apart

later the

gums ulcerated and the teeth fell out

and the joints and so on and the person

died

well what about this lack of muscular

strength

and regaining strength in cameron’s

patient

there’s a simple chemical substance

named carnitine

which is present in muscle juice to the

extent of

about one percent if you squeeze meat

the juice that you get out contains

carnitine

carnitine is required for muscular

activity you know you burn fuel

in the body to provide the energy for

muscular work and this is burned in the

cells in the muscle

the fuel that you burn is fat at least

one of the fuels carnitine is required

to carry

molecules of fat into these cells where

they can be

burned to provide muscular energy

just a couple of years ago a biochemist

showed

that carnitine can be made from lysine

an amino acid present in the body and

present in meat to lysine

by chemical reactions that take place in

the human body catalyzed by certain

enzymes

two of which are hydroxylation reactions that require vitamin c

you can’t make carnitine from lysine

without

vitamin c the fact that people

sometimes say i have to eat red meat to

be strong

may be that they are getting carnitine

from the meat

and that helps them to be strong

or also getting lysine which is present

in larger amounts in

meat protein than in vegetable protein

and if they have enough vitamin c they

can convert the lysine

to carnitine and thus have

even greater muscular strength

so one of the investigations that we are

carrying out

as a result of the various observations

by dr cameron and by others

is to study human beings

how much carnitine is in their bodies

how much is

floating around in the blood and if you

give a person

extra lysine and extra

vitamin c does he then produce more

carnitine

and become stronger too dr pauling one

of the other very commonly asked

questions surrounding vitamin c’s use in

supplemental doses has to do with

another

antioxidant knowing that vitamin c is

considered a biological antioxidant that

works in the water soluble portion of

cells

this other antioxidant is the trace

element selenium which is receiving

quite a bit of attention recently

because it’s supposedly a

cancer preventive nutrient it’s been

suggested by dr walter mertz at the usda

that high dose vitamin c therapy

antagonizes selenium

status or at least prevents selenium

absorption from the diet do you have any

comments on that relationship

well i’m not sure that my comments are

as significant as those that you would

make i

would think that selling the

tercellonite

might well be reduced to elementary

selenium

by ascorbate that selenium

in an organic molecule such as salina

methionine or some other organic

compound

would probably not be affected by the

ascorbate

but i'd be interested to know your

opinion on this point

i concur with your comment in fact the

paper

in which the oxidation reduction

relationships between

inorganic selenium and selenite solenoid

and salinist acid and vitamin c

and the organic selenium as sodium

methionine selenium cysteine

confirmed exactly what you just pointed

out and that is that

there was not a reduction in the organic

forms of selenium to selenium metal

where there was in the inorganic

selenite cylinate form so it would seem

to me that if you were supplementing

with the sodium selenite preparation and

taking high-dose vitamin c

that you may render some of the selenium

unabsorbable but if you were taking the

organically bound form it would be

a very small probability reaction yeah

and of course

in the organically bound form

probably is selenium minus one

already as far reduced as possible so

that the scarbase couldn’t reduce it any

quicker

exactly right one of the other things

quickly that you might want to comment

on is the

suggestion that you can utilize a

fat soluble form of ascorbate called a

scorpio palmitate where the ascorbic

acid molecule

is esterified to palmitic acid and that

this is supposedly

a very useful antioxidant in the fat

soluble milieu of cells that you should

be taking a supplement of a scorpio

palmitate

you have any comment on that i

would need to be convinced

that that that soluble form of a scar

bait if we are taking enough

of the fat soluble antioxidant vitamin e

so my recommendation would be to spend

your money

on vitamin e and save money by buying

the cheap form of vitamin c

rather than to buy a more expensive form

of vitamin c moreover i don’t think

anyone should rely entirely

on this fat-soluble form it might be

taken as

an adjunct to a good amount of

scarbates itself ascorbic acid or sodium

scarbate or calcium ascorbate itself

what dosage level would be considered

for the average consumer who is

reasonably

well let’s say not sick what dosage

level of vitamin c would be considered

at a range that they would have concern

about excessive intake is there some

range that we might say for the average

person would be in the desirable range

well vitamin c isn’t very expensive

but i buy costs about a cent and a half

a gram the ascorbic acid crystals and

the one gram tablets you can get for

around three cents

a tablet three cents a gram so it isn’t

very

expensive my 12 grams a day

comes to about 18 cents a day

nevertheless people may not want to

spend too much money on vitamins i say

a little extra vitamin c does a lot of

good

to take even 250 or 500 milligrams

that’s a lot of good to take a thousand

milligrams

a day does more good to take five

thousand ten thousand milligrams still

more good

but in general i don’t complain

about a person’s telling me that he take

two thousand milligrams a day as people

get older i think it would be wise for

them to

increase the intake i’ve already

mentioned i think

the 12 grams 12 000 milligrams that i

take

is probably the right physiological

amount

you can get along pretty well with a

somewhat smaller amount

i think that’s the right one now a

person can

find his own upper limit from the

gastrointestinal

response that was observed 10 years ago

by dr cameron

and more recently by dr cathcart dr

cameron observed

that a sick person can take much larger

amounts of vitamin c by mouth without

its acting as a laxity for having too

much of a laxative effect

producing looseness of the bowel then

the same person when he gets well

consequently it might be good for a

person to find out

what his gastrointestinal limit is

and if it’s unusually high it may well

mean

that he has a special need for

vitamin c that he is really not

in the best of health

i can take only about 12 grams a day

well i could take more if i split it up

into a succession of small doses but

not much more some people can take 20 or

30 grams a day before they get this

response even though they consider that

they are in good

health a really sick person dr cathcart

reported

might have to take as much as 200 grams

in a day to get this response

but he can’t do that day after day

in a few days he’s well if he has

mononucleosis or hepatitis

some such disease and has had to cut

down his

intake this man who comes to see me

every few months

the chemist down in san jose still has

metastatic cancer and it’s clear that he

is not

well both because you can see the

metastases when he has cat scans

made also because he can take his 130

grams a day

without having far too much looseness of

the mouth

so he’s not well he’s able to work to

stay alive

now for eight years but he hasn’t been

able to

get rid of the cancer and get back into

good health some people do

apparently succeed in that

i know that the listeners would probably

like this to go on

indefinitely but we certainly have to

recognize that you have many many other

responsibilities today and we appreciate

your time i would like however to leave

with one last question being put to you

before we have a chance to get together

to do this

in the future and that is i think a lot

of

people see the rate of change of

information occurring and the the how

quickly science is evolving and

developing and

we all probably feel a little bit of a

state of overwhelm

as a visionary as a person who has been

a major contributor to the field of

science and healthcare and had

your finger on the pulse of what’s been

happening for 70 plus years

what is your vision as to what’s

occurring right now and a future that

you see for healthcare

i think that it will be recognized

before

long that the greatest contribution

to medicine made in the last

quarter of the 20th century is the

recognition

that nutrition including nutritional

supplements

can be used in a far more effective way

to improve health

prevent disease and even in the

treatment of disease

usually as an adjunct to conventional

therapy

then had been possible than it had been

used in the past and in particular

i think vitamin c which is unique among

the vitamins in

two or three respects will be found to

have

very great value the estimate that i

have made

about the value of nutritional

supplements

vitamin c and some other health

practices

has been increasing that is the

value of my estimate of that value has

been

getting greater year after year so that

in an article that i wrote recently

i made the estimate that in this way

it should be possible to increase the

length of the period of well-being

and the length of life by 35 years

which would mean around 110 years as

life expectancy rather than 75

years and this i feel is desirable

there are periods in life when you were

miserable

when you were young you were miserable

at least i was miserable before

i found the proper relationship to the

world as a whole to the opposite sex and

so on

i was not happy as a child a teenager i

was miserable

and i expect that there may well be a

period

of misery associated with the decline

in health that culminates in death

maybe that this can be shortened this

second period of misery the first i

think has got worse in the last 20 years

with the relaxation of the

social pressures on young people to

behave

that kept them from getting involved

with problems so

intimately they’re as they are now

involved so i believe that we

can then increase the length of the

period of well-being

with respect to the period of less

well-being

that is we’ll win out in this way

by being happier over a greater fraction

of our lives than at the present time

the december 2009 edition of functional

medicine update

will continue on part two this

is the end of part one

[Music]

so now going from this extraordinary

discussion with dr linus pauling

concerning his view of orthomolecular

medicine vitamin c

and the future of this molecular

medicine concept

let’s move to the next important

founding father of this concept in the

20th century

and that’s dr abram hoffer who as you

know as a psychiatrist and a phd in

chemistry birthed the concept of

ortho-molecular psychiatry and also

was in practice seeing patients up to

the end of his life

an incredible contributor to our field

and who i had the

great fortune of being able to interview

just very shortly before his transition

moving on so with that let’s talk in the

21st century with dr abram hoffer and

his view

of this whole field well this is a great

privilege for me

i’m representing the institute for

functional medicine and as you know

we’ve been very

fortunate in the institute for

functional medicine for the past 14

years to

every year honor someone who we feel has

provided meritorious distinction in the

field of functional medicine

and we’ve named this award under

the terms of a person who is really one

of the founding fathers of functional

medicine and that’s dr linus pauling

there’s probably no fitting recipient

that would be more deserving

for this linus falling award than the

person that i’m so privileged to be able

to

honor today and that’s dr abram hoffer

dr huffer this is the 14th linus pauling

functional medicine award we wanted to

kind of save it when it got rich enough

it was really worth something and

we think that you as one of the what we

call founding fathers of the whole

paradigm upon which functional medicine

is built really represents

the core of what we’re trying to teach

doctors in the future as the plaque says

for a lifetime of pioneering work that

has elucidated the important role

of biochemical uniqueness and

orthomolecular therapies

in a wide variety of chronic mental

health conditions the institute

recognizes dr abram hoffer’s significant

contribution

to the evolution of functional

medicine’s knowledge and intellectual

architecture

for the prevention and treatment of

complex mental health disorders

we want to thank you for your many

decades of extraordinary leadership

in developing this field dr bland thank

you very much this is one of the highest honors

i had ever expected to receive linus was

a fantastic person

a major fantastic person my mentor and i

think he not only changed medicine

he certainly changed my life as well

thank you very much thank you very very

much well deserved and

as i said there would be no functional

medicine if we’re not for abram

roger williams thank you so this is a

really special opportunity dr hoffer for

me

as you probably know i’ve valued as have

literally tens of thousands of

practitioners from your work and your

insight

and to sit down in your office here in

victoria british columbia

and know that you’re still practicing

psychiatry at the level of wisdom that

you can bring to this discipline

is is absolutely amazing it’s something

that we all aspire to

do in our own professional lives not

many of us will be as successful in

creating a whole new concept that you’ve

created but certainly your model of

stick-to-it-ness and discipline and

dedication to your patients is a model

for all of us

so i’d like to just start we can go all

the way back obviously to before 1957

but 1957 for me is kind of where i

started my understanding of you by

reading your first paper

published on niacin and schizophrenia

right how would a psychiatrist

even be interested in knives

well i would say luckily for me jeff

i got my first degree as a phd

and later on i got my md now there’s a

different set as you know

you’re taught how to do things

differently a phd thought how to think

and a doctor thought how to remember

and having taken my ph.d first it was a

great

thing for me to have done it that way

and after i was made director of

psychiatric research for the province of

saskatchewan

in 1950 i had the following

qualifications i knew absolutely nothing

about psychiatry

which i think looking back on it was

superb because i hadn’t been taught all

the things that you could not do

and so it was my job to do something

about these poor schizophrenic patients

half of them in our mental hospitals

would never get out none of them would

get out

we had no treatment it was absolutely

awful what happened to them

luckily at this time dr humphrey osmond

was brought out from england we were

desperately short of doctors

to man our mental hospitals in

saskatchewan

and dr osmond came often i didn’t know

he was coming

nor did he know that i was interested in

research but when he arrived in the fall

of 1951

a very hot dusty saskatchewan day

i met him in dr mccarrick’s office in

regina

and turned out that he brought with him

a very important paper

he and his friend john smithey’s john

smith is still alive

living in california they had done some

work with masculine the active principle

of peyote

and they had concluded that the

experience induced by masculine

was in many ways similar to the one

induced by schizophrenia

now this was a interesting observation

it had been made before by another

doctor but dr taylor’s talking some

years before

but what he and john smitty said was

even more unique after that they then

looked up the chemical structure of

masculine which in many ways is similar

into what to adrenaline call a

catecholamine and so they

concluded with the question was it

possible that in the body of the

schizophrenic patient that might be a

compound with the properties of

masculine

and some similarity in structure to

adrenaline and he brought that paper

with him

now he had first presented that idea in

england but they thought it was so

absolutely awful

that he was totally rejected and he was

so unhappy at this that

he told his wife that he would have to

get out of england as far as he could

and when he saw in the london times an

ad

asking for a psychiatrist to come to

saskatchewan he said to his wife that’s

far enough i think i can go there

so he came there hoping that he could do

some research

we met in nashville we learned how to

understand each other because he spoke

with an english accent and i spoke with

the prairie accent

so after we learned to communicate we

became very close friends

so i looked at the idea very carefully

and it made sense

it made so much sense

and so i began to since i was in charge

of the research and had time to do the

reading and the study and collecting

money all the other stuff you have to do

so i looked up the formula of aldi known

at that time hallucinations and they all

had

and i remember distinctly that one day

i’m sitting in my kitchen table my

wife’s doing the dishes and i’m sitting

at the table

all covered with papers i’m drawing down

formula and i said oh my god there it is

they were indoles they were indoles and

you know what that meant

because there’s a law in chemistry that

compound to a similar structure

tend to have similar properties so i

said oh god there it is

so we said we now have a new formula

with the hypotheses will be

look in the body for something which has

the properties of masculine

and which is similar in structure to

adrenaline and it’s got to be an endo

now indoles in themselves there are many

of them found in the body as you know

they’re made in the gut

and not all of them would be that

important so we have to narrow it down

to indoles

that might be derived from adrenaline

and in those days there were only two

that we knew about one is called

adrenochrome

which later on we discovered could be

converted into adrenal lutein

and the other one was by theory

noradrenochrome

so that gave us the hypotheses

but we didn’t really care about the

hypothetical we wanted a treatment

we didn’t care about the hypotheses i

knew then that most hypotheses turned

out to be dead wrong that’s the way it

goes in medicine

we wanted a treatment and since i had

taken my phd in minnesota

and my phd thesis had been on b complex

vitamins and wheat i was familiar with

the vitamins and i knew all about

pellagra

and the diseases it causes so we said to

us so well let’s try niacin maybe

if we get niacin we can protect the

body against the impact of this solution

agenda that we thought was present

but we didn’t know its structure and we

didn’t know yet about that

so that’s how we hit upon niacin and i

recall

there was a very middle-aged woman

she was the head stenographer of a large company in regina she became paranoid

right after the war they used to have

christmas parties

one day after the party this is a very

moral

good woman got the idea that her boss

was in love with her

they’d never had a relationship and she

became so depressed because she thought

it was going to break up their marriage

that she went into a deep depression

was admitted to our hospital under

someone else

there she had shock treatment she was

better for six months then she went to

another christmas party

same thing again went too depressed came

back to the hospital again had shock

another

time nothing happened and then she came

under my care so i said to her so well

here’s an idea okay she’s going to be

number one i’m not going to give her any

more shock treatment she already had

three series she hadn’t responded

we had no drugs no tranquilizers we had

barbarians

and we had the narcotic that’s all we

had

and so i started her on niacin

and she’d like to take it and most

people didn’t like to take the flushing

kind

that’s all we had but anyway she took it

and she gradually got better and after

about two or three months in hospital

she’s okay discharger

a couple of years later her sister

brings her back again she’s getting

paranoid once more

what happened she stopped taking her

niacin

so i called her in the office and i’m

very rough and i yell at her and

tell her i’ll read all sorts of terrible

things to her including sock if she

doesn’t

go right back on the vitamins again she

went back onto the niacin she gets well

after two years she stops taking it

another relapse

same thing put her back on ice and she

gets well

so now she stays on it then after about

five six years on eyes and she says dr

harper she says

i’ve been doing so well now for four or

five years you think it’s okay to go off

i said okay let’s try and she went off

her knives and she remained well

thereafter

she went back to her senior job looking

after 30 stenographers in this

demographic pool jeff when you see one

person like that get well there’s no

doubt anymore

i mean there is some doubt but really

there’s no evidence for a scientific

doubt because

if one person can do it

surely they’re going to be more who are

going to respond the same way

and that led us to our first controlled

studies that we did the first

double-blind controlled studies

in the history of psychiatry and the

first in the united states

in england they had done double blinds

on arthritis

but they had never done any on any other

field so we were the first

and our double blind experiments showed

that we could double the

two-year recovery rate of patients when

we gave them niacin or niacinamide

compared to placebo controls so that was

basically how we got started so we

published that paper

and we were lucky we got that published

because the editor was a close friend of

mine

otherwise he wouldn’t have taken it so

when i look back and i listen to your

story

i’m reminded of so many interesting

things we could call them fortuitous or

serendipitous

or directed so here is a person in your

case that gets a phd

in a chemical field and understands

about pellagra and niacin

as it relates to an entirely different

field and discipline from that of

psychiatry

then goes to medicine and focuses on

psychiatry and then because of a

creative mind

makes the connection and as i recall in

your paper you were maybe

the first group to talk about the

similarity between pellagra's dementia

being schizophrenifor with schizophrenia

that's correct so that connection is

a brilliant leap of abstraction to most

people because

it was clearly obvious it was so

terribly obvious i didn't ever think

people would object i thought that would

be

looked upon as a hero i said oh my god

psychiatrist are going to love me now

by that time i was very popular anyway

because i was doing a lot of nonsense

research that didn't mean anything

and as long as i published papers that

had no meaning you know i'm talking

about

i was popular but after we published

that first paper that you read

guess what they said oh my god that

guy's a

heretic and at that time of course as

you know the tranquilizers came in

in 55 56 57 and they were financially

so rewarding to the big drug companies

that they overwhelmed the whole field

and today's psychiatry is owned by the

big pharma

that’s what’s happened to psychiatry

today so

as you made this discovery i find it

extraordinarily interesting from an

intellectual

development perspective that you took

the pre-pullage dementia connection to

schizophrenia and then you ask

questions about well what other genetic

metabolism disorders associated with

nutrition can we think about that could

have central nervous system effects

like hyper homosystemia yeah and then

you talked about b6 and b12 and folate

so your model

got extended and it seemed to be able to

be mapped against many of these

conditions

well that’s true and that wasn’t just my

doing well we organized the

american schizophrenia association many

years ago

and we were able to enlist the interest

of a bunch of

very good american psychiatrist dr ted

roby from

new jersey alan cox from new york a

whole bunch of very

brilliant psychiatrists and it was wide

open at that time

since i was director of research i had

lots of time i made myself everything i

was chairman i was this over that

and we would meet twice a year as a

committee on

research of the american schizophrenia

associates

and we'd quite open alan caught would

say hey guys

i had a patient that wasn't doing any i

wasn't talking it was mute

and he says i put him on vitamin b6 and

that was an amazing change

so we'd all say hey isn't that amazing

instead of saying oh you're

forget that nonsense you can't do that

you know

we said well isn't that interesting so

the next meeting we would someone else

come and i tried out what god said

and hey guys it works we had these

informal meetings and this was a

fantastic amount of

information and that's where we brought

linus pauling in

i remember we had our meeting in

vancouver

at the home of dr ross mclean there i am

chairman of the meeting and as a

chairman you’re not supposed to do

anything you know you’re supposed to

just sit there and be quiet and

make sure things are running properly so

i’m listening to all my colleagues there

are 10 of us

reading their fantastic papers they’re

talking about folic acid they’re talking

about b6

talking about zinc carbohydrate everyone

they’re all

giving us some amazing information

so i said to myself this is fantastic

here this very important information no

one hears about it we have to publish it

so david hawk is just sitting on my

right and he was a good friend of mine

and i said david i said

to the group we have to publish a book

so they stop and since i’m the chairman

they have to listen to me that’s the

power of the chair

and i said david you are going to be the editor and he gulped

he said what i said don’t worry we’ll

help you each one of us will submit a

chapter

so eventually david said yeah okay he

thought he would do it

so after a while we were starting to

organize this book

so then it occurred to one of us i don’t

know who it was it might have been david

that maybe we could ask linus pollock to

become an editor

i’m talking about the book of lord

molecular psychiatry

so david no no i think david wrote to

pauling and asked that pauline said yes

he would

on one condition and the condition was

that he would have to approve of every

paper that appeared in that

so we of course that fantastic and

that’s how that book came out

because we had that spirit of

cooperation we were able to examine new

ideas so quickly we didn’t have to wait

for these

terribly slow universities sponsored

you know these if you have an idea today

in you forget it

by the time you’re ready to go for it

two years later you’ll have lost

interest in it

we didn’t have those handicaps in those

days towards doing research because we

knew

the basic school of medicine first do no

harm

and you cannot harm your patients by

giving them vitamins

it was fantastic so now you’ve talked

about an epic chapter that

i think propelled this whole model that

you burst forward and that was the 1968

publication in science magazine authored

by pauling of the

article or the molecular psychiatrist

right to put the discipline

up on the big board did that change the

visibility for you of what you’d been

doing

yes it did it gave it prestige

it also gave us a lot of work but i

remember what happened because i have

not met linus falling before then but

one day apparently he had been getting

letters to a large number of americans

who had heard about the vitamin approach

and were putting themselves on it and

we’re getting some response so he was

getting more interested

and it fitted in with his own basic

concept of molecular medicine

i think this had been gestating in his

mind for some time

so one day i got a letter from linus

pauling dear dr harford

and he said i am enclosing a manuscript

which i propose to send two sides

would you please go over to make sure

that you are properly quartered

now is that amazing can you think of any

other

uh scientists that would do that he was

so honest

and sorry i read it and he of course

linus pauling never made any mistakes

and so i read it carefully he quoted us

he was very fair and very honest for

what he wrote about this

i wrote back and said it’s absolutely

great it’s great

so then he came along with the word now

at that time we had been playing with

the word mega vitamin therapy

which i didn’t really like that much

there’s no such thing as a mega vitamin

it just doesn’t exist

and when he publishes paper i said

that’s the answer this term

atlantis pauling’s covers almost

everything that we are going to do

since then i haven’t thought of anything

better than the term ortho molecular

but even amongst my colleagues they

became very upset

because they were getting used to deter

mega vitamin therapy

and we had our own you know we had our

own conservatives as well as liberals in

our own

group and so i took on a major role i

said i am going to defend the word ortho

molecular until it kills me

it’s going to become the word and since

again i was chairman and i had some

prestige

i was able to gradually force the ward

in and

even with the journal of work to

molecular medicine for many years people wanted me to change the word because the

molecule is very unpopular i said so

what

of course it’s unpopular but we’re going

to change that and thank god jeff

yes we are actually changing the word is

becoming well known

popular in europe in brazil many other

places

and recently in the past few weeks we’ve

had people here from portugal

people here from all over the place who

are in fact so determined to go back

home

and start up with this word now it’s a

temporary word

it’s a temporary word i think because

one day when all of medicine is

orthomolecular we won’t need the term

we’ll drop the term orthodox and we’ll

say this is what modern medicine is

and anyone who doesn’t practice it will

be subject to malpractice suits

so you mentioned this book and it

strikes

for me such an important chapter in my

life because

as a young assistant professor in 1970 i

was searching for models and mentors

outside my own department and

trying to carve out my identity as a

young new emerging

academic researcher and i happened onto

that book

in i think it was probably 71 or 72 in

that early 1970s period and it

just was like finding the rosetta stone

for me when i opened that book

it was so powerful each chapter was like

a treasure

you would assemble such a remarkable

group of authors and thinkers

yeah but uh but don’t forget we also had

the master

reading the paper and he was so kind

i remember in one of the paper i sent

her a manuscript i like to write content

i think a paper its content is important

i’m a bit more sloppy when it comes to

punctuation and style

i just don’t have enough energy to do

that and linus so one in one of my

papers i think i left out a

comma and linus is too polite to tell me

that you had

forgotten to put that comma in so he

sent me a letter he said dear abram he

said

i think your secretary forgot to put a

comma

in this particular spot isn’t that

amazing that’s that’s so dr pauling

yeah i mean the two of you share

something very common that i think great

people have and that’s

humility and grace well he had that he

had that

you both have that but he but he would

he also had

he was like a racehorse i never lost the

race

and i knew that when lana’s joined us i

said to our friend

the battle’s over we won

now you may not know it the world may

not know it for a long time but we knew

we had won the battle because his

theories even today are so sound

i’m sure you know and the sad thing is

that if the drug companies had accepted

his view they wouldn’t have wasted

billions and billions of dollars

finding toxic drugs that do more harm

than good

it’s been a terrible waste the dark

industry has been a terrible waste

i was proud to be a psychiatrist very

proud

i started as a standard psychiatrist i

got my specialty in psychiatry

i became well known in that field i was

one of the five top

directors of psychiatric research united

states in canada

we were the first to bring hal doll in i

remember i was one of that first study

group to do haldol

i knew drugs i knew drugs i was an md

and i was proud of it and now guess what

now i have turned against it

i now have concluded and since i no

longer am practicing as a doctor i can

talk freely

because they can’t take away my license

that i don’t practice anymore

if every psychiatrist were to go to mars

they would be worse off and we would be

better off

that’s my opinion so when we look at the

development of this whole

wonderful rich model the concept that dr

pauling proposed in that paper in

northern lakefront psychiatry and

science magazine was a concept that was

fairly sophisticated

for the average doctor because

absolutely mass action and kinetic rate

constants and it talked about

enzyme binding to coenzymes and these

are things that the average doc probably

doesn’t think that much about

but some now thirty years later

dr bruce aims at berkeley i know it’s

back with this marvelous paper

that says guys relook at this this is

all right

that’s right and you know in his last

paper he maintains that almost

most of the most of the conditions in

fact

are a result of some metabolic fault of

this type

now harry foster and i wrote that book

and i stole linus pauling’s title i hope

he forgives me for

a bit of plagiarism but i thought it was

such a nice title i would honor him by

using it

and in this book we maintain as a result

of very careful studies

that half the population of north

america would benefit

by taking b3 either niacin or

niacinamide

it is a very very important nutrient

they’re all important

but this is one that particularly

important because linus falling

suggested that we lost the ability to

convert sugar

into vitamin c what is it 25 or 50

billion years ago

that this was advantageous as long as

our diet contained enough vitamin c

i think the same thing is happening with

b3 and tryptophan

and there was a major change in 1800 the

first description clinically of

schizophrenia was around 1800

and before then was rare and around 1800

it was a major change in that millers

learned how to make white flower

on my pha i was a flower chemist i did

analysis on flower

so they learned how to make white flower which have lost all of the vitamins

and i think it was after that that we

gradually began to see an increase

in the incidence of schizophrenia and it

keeps on going up david horobin a good

friend of mine

in his book out adam and eve or

something

he maintains that the genes for

schizophrenia i think there’s more than

one i think the whole bunch of them

these are gradually sweeping into the

population

and my prediction is that if we all are

still here a million years from today

we will all have the genes and no one

will be sick

because if we were intelligent enough we

will make sure

that every human gets the right

quantities of b vitamins and not just

niacin all the b vitamins

and my prediction is that almost half of

all the human illnesses will be banished

will banish within 10 years so this

sounds very

consistent also with dr roger williams

concept of genetotrophic disease

absolutely

you were all birth in the same period of

time

you dr pauling and dr williams in the

40s and coming into the 50s was when

this concept really emerged

beautifully well i knew roger williams

he was a great guy unfortunately he was

deaf and blind almost at the end of his

life but he was a great guy

i loved his work in fact i referred to

his concept

frequently i have a friend who was the

world’s greatest pianist anton quirty

he’s a canadian beautiful pianist

and you remember that roger williams

made the comparison of an orchestra

in other words each member of the

orchestra plays a vital role

otherwise you don’t have a symphony if

you don’t have everyone playing from the

same

book with the same conductor and the

same music you have a cacophony you

don’t have a symphony

so i tell the story which is true in

boston a few months ago

anton cuerte was the world’s greatest

pianist

he was at a concert where his son was

the conductor

and that evening they were having his

show and the pianist who was supposed to

perform

couldn’t make it so without any notice

he called upon his dad

to come forward and play and they had a

fantastic concert

so this was reported in the economist so

i thought that was absolutely great

so the story is i talk about this and i

say that

according to linus pauling

no nutrient can be substituted by any

xenobiotic

if you need niacin no drug is going to

replace it you have to give back

so i say it’s like suppose in a concert

the first violinist dies or faint or

something

and the conductor decides the soul must

go on so he invites the drummer to play

in his place

you ain’t gonna have anything you’re not going to have a symphony and i say

unfortunately every nutrient is like

anton qwerty

every nutrient has to play its own role

and you cannot replace it

and that’s my major complaint about the

drug industry they are trying

hard because they can’t patent vitamins

they’re trying hard to find a drug that

total replace

niacin my friends and i discovered at

lowered cholesterol levels in 1954.

you can’t patent niacin if i could have

taken a patent on it i’d be a

billionaire today

because drug companies have spent

billions trying to find a compound that

has the same

good beneficial properties of niacin

without

any of the terrible side effects that

the statins have

it’s not available so roger williams is

the combination of roger williams and

linus pauling

that i think were two of the main

contributors to this whole field

and i’ve depended upon him really hugely so what you’re teaching all of us as

we’re hearing your story

is that all great new paradigms start

with observation

and absolutely a good observer then and

being

not afraid of your observation and

saying this is something really

remarkable that i need to follow up on

not just discounting it as an aberration

and jack you’re totally right i

absolutely agree with you

the only honest scientists are good

observers

observers and thinkers they double blind

don’t tell you anything double blinds

are a fraud

i think they should be totally made

illegal they shouldn’t permit them at

all

you have to have good honest i should

have said honors you have to have good

honest who don’t have any conflict of

interest with the drug companies

because once you are working for a drug

company honestly flies out the window

no that’s harsh but i’m absolutely

convinced it’s true

and so does the literature so let’s

start back at the turn of the last

century for a moment because i’d like to

trace the impact

of your intellectual development on

medicine from talking first about

archibald gerard

who was credited as the founding person

for the field of genetic metabolism

diseases of infancy

great work fantastic work so that then

was kind of leading people to the belief

that we had these inborn errors of

metabolism that created

wilson’s gaucher’s fabrics this whole

constellation methyl melanic acid areas

and

artnems disease and so forth and then

along

comes abram hoffer and humphrey osmond

and

for the first time a model of biological

psychiatry is born

which takes these constructs that there

are these molecular

processes going on in the body that have

genetic

relationships that are one size not

fitting all that there is a

differentiation that’s right

and what you birds it seems to me is the

biological

psychiatric revolution from the

observations you made

but then it appears to me and this is my

question that biological psychiatry as

you birthed it

got perverted into becoming a new form

of pharmacology with new to nature

molecules that’s right

so how did that happen how did a good

idea get transmuted into becoming well

the idea that churchill gareth developed

that was a fantastic idea

and the early pioneers and the use of

vitamins were

that type in fact almost all the papers

dealing with vitamins published until

1950 were positive

it’s amazing the amount of literature

that describes the many

virtues of these vitamins but they were

tied down to what i call the

vitamins as prevention paradigm

which meant that you only needed

vitamins for a very few

classical deficiency diseases like

scurvy and pellagra

so on and they couldn’t break this

concept into saying

well maybe we should try higher dosages

the early pioneers the early

pellegrologists who did

such great classical work in the united

states

they were using all sorts of doses of

vitamins and getting

good results so this was the beginning

of breaking down the concept of the old

paradigm

and i’ve known some of my friends who

lost their license to practice because

they gave their patients vitamin c

it sounds unbelievable it’s laughable it

has happened

it has happened so we try to move into

the new paradigm which says look upon

vitamins as

treatment potential look upon the way

you would a drug if the patient has a

severe type of pneumonia

you’re not going to give him 10 000

units penicillin a day when he needs 10

million

and so what’s happening today in the

literature is that all these negative

papers if you read them carefully

they’ll make a claim that nobody ever

made before they’ll play oh

vitamin e prevents heart disease well

whoever claimed that

i don’t know of any massive claims that

have said that what they have said is

that if you do have heart disease you

can get a lot of help

by taking enough vitamin e so having

made a spurious claim they then go ahead

and do a study

giving their patients 50 units of

vitamin e

a day and then they spend millions on

this stupid study

and then they come up at the right

conclusion oh we were right

it doesn’t help and this is what’s been

happening in the whole field of

nutrition the whole nutritional

literature is

unbelievable there’s a very famous greek professor of philosophy in mathematics

and he’s very blunt like i am he says

80 of the stuff published in medical

journals is wrong

eighty percent of this stuff in medical

journals is wrong

i think he’s underestimating i think the

most interesting parts of today’s

medical journals are the ads

because they’re beautiful pictures and

they’re well written and they’re full of

lies you know

the medical ads are superb for fooling

the public

the content not that interesting because

it’s written by the drug companies

mostly

so we’ve talked now about extraordinary

successes and contributions and things

you’re very proud of are there things

that you

look back and say these are things i

wish it would have gone differently

i wish they wouldn’t believe me

the main thing is i wondered why didn’t

they believe me why didn’t they so why

do you think they didn’t

well i don’t know why it’s because it

takes education

you have just gone through a very

exciting interesting election campaign

in the united states

do you have a president-elect for the

first time who was black

he spent 600 million dollars at least

on the campaign he apparently had one of

the most promising campaigns ever run in

the united states

and all he had to do was to persuade a

few people that they could elect him if

he was black

now if it takes that much money to

change attitude

you can imagine how much money is going

to take to change the medical attitude

who are already firmly convinced to have

the answers

the answer the medical profession has

are more drugs more drugs

they’re still looking for the holy grail

that they will never

ever find that’s the answer and the only

way we can deal with that is to do what

you’re doing

education education and education we

have to demand more and more

teach the doctors if you can teach 30

000

doctors and if 10 of them are convinced

you’ve made a major contribution and

it’s happening

so that’s a very optimistic note now

with your

very senior perspective and seeing how

things travel

through time and space and evolution in

the profession

what’s your view of medicine as we look

forward to the future

i don’t complain about all the medicine

i think surgery is superb

if i were in a car accident i would want

to go to a modern surgeon they do a

beautiful job

i think that neurology is just about the

same as psychiatry

the worst branches of medicine are

neurology

internal medicine pediatrics and some of

the other i think that

the surgeons are the ones who are really

the tops in the field

maybe that’s because they get paid the

most i don’t know

i’m hopeful that this will change but

also we have to widen the people

who are allowed to treat we have to

bring in the natural past

we have to bring in all sorts of

therapists we have to allow

psychologists to practice orthomolecular

and also we have to give patients

freedom

we don’t have enough freedom you in the

states that we in canada we don’t have

enough freedom

to select our doctors take for example

in canada i had a young

schizophrenic male who was both on drugs

which he got free

from the government and he was unniacin

that he’d have to buy himself

and he was doing well judy coming along

and then he came to me he said dr harper

he said

i can’t afford to buy the niacin it was

five dollars a month

can’t afford it

he smoked they said he wants a good

smoke you know he couldn’t quit smoking

he can afford that because the

government wouldn’t pay for the five

dollars a month

he had to stop taking the niacin and

he’d remain sick forever

now that’s what’s happening to our

recent

i believe that what you’re speaking to

is

more than a medical paradigm it’s a

thought process as to how we as

individuals take responsibility

understand something about our bodies

and then elect to do something

as advocates for our own health and

taking charge of that and medicine is

there to help educate and support

patients but in the end

there has to be some responsibility in

the patient taking charge

yeah i absolutely commercial that i

think that the americans made a major

mistake when they changed the fda act

under jack kennedy you may remember

before that the fda

only policy was to check on the toxicity

if they could prove that the drug was

non-toxic they said that’s your problem

hereafter

i think that wasn’t a bad policy but

when they gave the

fda the role a ruling on the efficacy of

drugs it developed an enormous problem

imagine yourself you’re the head of the

fda and a drug company comes along

and says we have this application and

they’ll send you a boxcarful or data

that you have to go over and you have to

decide shall i release it or not and if

you release it

and three years there it turns out

you’ve killed a hundred thousand people

you don’t be happy about that so they

developed a system which took away all

guilt they began to use the double-blind

controlled study as the arbiter

of whether anything is good or not and

if the double-blind p-value at .05

okay it will start fall that’s what the

p-value said

there’s a drug that’s now used and it’s

very common for alzheimer’s

and i understand that the company that

produced that

the first 11 or 12 studies they

submitted to the fda were all negative

the 13th or 14th were positive and

according to fda rules

if you get one positive out of 10

they'll still approve

so here we have this drug which i know

well doesn't do anything

except make the drug companies rich we

have too much of that

i don't know how we can do that we have

to change the patent system

if we had allowed vitamins to be

patented different situation

so we're at a very interesting juncture

i think in human history there are these

epic

points in human history inflection

points we've kind of assumed

that cultural history grows linearly but

it doesn't it grows and fits and starts

and we're in one of those really

interesting

exponential change periods so as we see

this change occur

the leverage of wisdom that comes from

the past will become very

important for determining our future if

a doctor was starting out today and

you were to meet with them what guidance

would you give them

in how to before i would accept them

into medicine

i would want to take a course on the

history of medicine

the history medicine history of conflict

most doctors don’t know that

for example anesthesia was opposed

because the male doctors knew that women

had to suffer pain god

said that when you have to have a baby

you have to suffer pain

so therefore you could not use it to

relieve suffering

except for queen victoria who thought

she was probably god in her own right

so she accepted ether and that broke the

log logjam once she

used ether for having one of her babies

pretty soon doctors were clamoring to

claim they had discovered it first

she broke the log jam did you know that

the stethoscope was opposed for a long

time

you knew about that and the reason was

that it was indecent

to listen to a female chest you’re not

allowed to put your ear up against the

female chest

why not male doctors weren’t allowed to

do that so they used

rolled up paper and then they started

the stethoscope

and that took a long time to bring in so

the history of medicine tells us that it

takes anywhere between 40 and 60 years

for a new paradigm to get established so

i’d want them all to take this

course in the history of medicine a

really good course in history of

medicine

i would want to take a course in the

doctor-patient relationship

how important it is that you be a human

dealing with a human of equal value

you are not talking down to a servant or

to a slave

and the medical profession they think

they are gods

and sitting in front of them are there

poor slaves who slay says doc i have a

headache great

take this bill out you go don’t bother

me anymore

and we want to change that i would

insist that take courses in sexuality

which they don’t do now most doctors

know nothing about sex except for their

own experiences

so we’d have to prepare them by actually

spending a year or two

in preparation for what they would take

this medicine and then i would like to

see

two streams into medicine medicine after

all is a technology it’s not a scientist

it’s a technology

and we need it we need superb

technologists that’s why the surgeons

are so great

surgeons are inside it but they’re

excellent technologists they know

exactly

what to do and how fast to do it they

know what to do

so we need to have two strains one

stream goes into a technical school

which gives you an md

but you don’t do any basic research or

if you do you switch

then we’d have the second one where

you’d go on to a university to take a

phd in medicine

which would then teach you the elements

of honest research

and train you to look into new ideas

whenever they develop we have to

completely change the whole system of

medicine

we have to take away from the drug

companies any athletes they have

we have to prevent them from giving any

money to the universities that’s going

to be a problem

we have to enforce governments to become

more responsible

and to take over the burden that they

really should be carrying because

they’ll save so much money they do it

properly

so these are the things i think would

have to do we have to reorganize the

whole

system of medical education what

happened in my time

it’s fascinating the united states now

um less than 10 percent of the incoming

students are interested in doing any

what is

traditionally called family practice

they’re all being pulled into specialty

medicine because that’s where the money

is to be made and that’s right

and so we’re losing a lot of the things

that you’re talking about the skill of

listening to patients the skill of

being there present to understand a

patient’s complex ideology of their

condition and

some of the things that are the most

profound in medicine you’re saying are

the simplest things if they’re properly

applied

that’s right that’s right you i i can

i can’t stop talking to things i’ve seen

i remember one patient who had them at

the hospital

she was on five or six or twelve

different medications all that said hey

nothing withdraw everything take her off

everything

which later you’re feeling great i had a

woman come here with a printout list of

28 drugs she was taking she’s 75.

she’s on 28 different drugs

and she says to me seriously dr harper

she says i

have to take every one of them

it’s been a terrible position now she’s

already taking 28 coffin am i going to

add three or four more

to this big list we are

over medicating we are killing

take it from hf this is a prediction we

are heading for a major catastrophe

imagine all the hundreds of thousands of

schizophrenic patients who have been on

drugs

10 15 20 years it’s the same as the hiv

virus

they’ve been on these retroviral drugs

everyone claims it’s not fantastic they

don’t die well they don’t die as fast

many wish they would they’re not healthy

they’re

very very sick people they cannot

perform they’re mostly sick they have to

take huge amounts of drugs

they get all sorts of illnesses like

tuberculosis lesions cancer

everything we are heading to a very sick

century if china really wants to beat

the americans

they should forbid any chinese from

taking any american drugs

and they’ll remain as healthy or sick as

they are now

which linus pauling called a moderate

state of ill health

and the americans and canadians will go

downhill down down down

we’re going to run out of people who can

work because there’ll be too many sick

our major industry is going to be

nursing doctors we are creating a

society where we need more doctors more

doctors more nurses

more caretakers more more this more that

and so we will spend all of our industry

all our money

just simply looking after ourselves

who’s going to build our highways who’s

going to

make our equipment maybe that’s why

we’re setting everything offshore

because we don’t have enough people left

behind to do these things

we are creating a very sick society

well i hope that you were as moved as i

was to hear dr hoffer

and also to put in the context of a

20-year previous interview

with dr linus pauling i mean just to

have those voices

resonating in our ears and influencing

our nervous system and

patterning our thinking is like putting

a virus of hope

and goodness into our system of learning

what an amazing two contributors they

are to the paradigm

of what we’ve been talking about you

know i reminded myself

as i’ve heard them and listen to these

interviews

that i was very fortunate also to

interview dr roger williams

and i think it’s really fascinating

to think through how these three

individuals who were all living at the

same time

gave birth to not only an industry but

to a field of medicine that

will gain traction as we move into the

21st century

further and becomes a systems biology

functional approach

towards health care so really epic

landmark

discussions let me if i can say a few

things in about dr

hoffer’s contributions for those of you

who might want a little

additional information dr hoffer

has two sons one who is a research

professor of medicine

at mcgill university at the lady davis

institute for medical research in the

jewish general hospital in montreal

quebec

canada he’s also an md phd

this is leonard john hoffer and i was

very intrigued to learn

showing coincidence in life that dr john

hoffer

was a doctoral student at the same time

that our own doctor

bob lehrman was getting his phd in

nutrition

at mit and so they shared the same

department in the same

research professor as medical doctors

going through their phd programs in

nutrition dr lerman is one of our

chief investigators and clinical

directors in our functional medicine

clinical research center

so it’s showing the contaguity of

knowledge and

interaction and how ideas spread from

individuals who

share intellectual domains and sometimes

even physical domains and how

these contacts can create spreading

effects in terms of the stickiness of

new ideas

so dr hoffer who obviously grew up in

the environment

with his father and you can only imagine

what was talked around around the dinner

table

ultimately moved on to become a

psychiatrist on his own and also a phd

in sciences

and has been studying many many things

from a basic

and clinical science perspective one of

which is to revisit

this vitamin therapy and schizophrenia

discoveries that his father had made

and in a recent review paper that he

authored in the

journal of psychiatry and related

sciences this is volume 45

page 3 in 2008 he talks about the fact

it is dismaying that well into the 21st

century schizophrenia remains a highly

prevalent

devastating and poorly interested

disease for which the only accepted

therapy is non-specific anti-psychotic

and anti-seizure medications

he goes on to say that fresh approaches

even unconventional ones should be

welcomed for study by the psychiatric

community if they are biologically

plausible and non-toxic

and in a review article this article in

2080 summarizes the evidence that

certain

vitamin insufficiencies can worsen the

symptoms of schizophrenia

and the evidence that large doses of

certain vitamins could improve the core

metabolic abnormalities that predispose

some people to develop it it

recounts the history in this article the

controversial vitamin based therapy that

his father and

humphrey osmond discovered for

schizophrenia called orthomolecular

psychiatry and the collaborative work

with dr linus pauling that you heard

dr abram hoffer talked about in his

interview

and it ultimately concludes in this

review article advocating a process for

discovering promising new

schizophrenia therapies that involve

small carefully conducted clinical

trials

of nutrient combinations in

appropriately selected patients

so this is again part of the evolving

frontier of this paradigm that we’ve

been describing

to look at nutrient insufficiencies from

an ortho molecular genetotrophic disease

perspective

and to modulate them in the individual

needs personalized nutrition or

personalized medicine in this case

to improve their function as you know

it’s currently popular to regard

schizophrenia as a multiple hit

neurodevelopmental disorder but equally

plausible is the older hypothesis of a

toxic psychosis triggered by an abnormal

endogenous metabolite

organic brain disorders including

indistinguishable forms of

schizophrenia may be induced by certain

drugs and by neurological metabolic and

inflammatory and infectious diseases

such disorders account for approximately

five percent of cases initially

diagnosed as first episode schizophrenia

by expert psychiatrists so we start

thinking that maybe not all forms of

schizophrenia come from nutrient

insufficiencies because it’s a

heterogeneous

diagnosis but if we could pick out those

that are

responsive to nutrient insufficiencies

we might be able to get

very marked clinical improvement in some

percentage

who knows if that percentage is 5 10 or

20 percent or

whatever it might be based upon a more

personalized approach that’s dependent

upon

proper assessment so this has to go back

to proper biochemical assessment

asking the right questions to get the

right answers you don’t ask the right

questions you never get the answers

so what kind of assessment do we do for

looking at

general nutritional status and

biochemical individual needs and this

whole genetotrophic origin in the soil

that archibald garage talked about at

the turn of the 19th to the 20th century

so with that in mind it leads us into

this concept that as dr abram hoffer

pointed out

the signs of schizophrenia looked very

similar

in presentation to part of the triad of

presenting symptoms of pellagra

dermatitis diarrhea and dementia and

these dementia-like

effects or affects resemble very closely

some of the things that are associated

with schizophreniform

presentations so as we get into this

whole

metabolites question and we start

looking at genetic metabolism diseases

associated with nutrient need

like systemia or peligris dementia or

things that are related to very berry or things that are related to

issues of various megaloblastic anemias

we see that they all have

these schizophreniform affects that are

presented in the individuals

suggesting metabolite toxicity to use a

term loosely

that has been seen as a consequence of

insufficiency of specific nutrients

needed by the genetic uniqueness of that

individual

so we not only have niacin vitamin b3

but pyridoxine b6 and

evidence on folic acid and evidence on

ascorbic acid

there’s good data on all of these having

influences

on metabolic function and genetically

unique individuals that can lower the

load

of secondary toxic metabolites so i

think that we’re starting to witness

maybe a revisiting of this now 50 year

old model that was presented by

dr hoffer and he talked about it in his

interview and i find it very very

interesting because if you look at dr

hoffer’s

original papers what you will find that

these papers that

appeared in the lancet really discuss

this metabolite hypothesis

in a very very what i would consider

precise way given the knowledge we had

about physiological chemistry

in the middle 20th century so we’ve kind

of dismissed these

out of hand for reasons that are not

easily understandable

and we’ve from that then just said well

we need to find

drugs to block the function or to

arrest a certain outcome and to treat a

symptom

without looking deeper at where the

cause of these

conditions that we call schizophrenia

might originate

i think this paper that appeared in the

lancet in the same

period of time in the early 50s and

1960s this actually was entitled

massive niacin treatment in

schizophrenia review of a nine-year

study

this is abram hoffer and humphrey osmond

in the atlanta february 10th

1962 on page 316 is a classic

and they go on to say that as dr hoffer

in his interview pointed out

their interest in niacin began at the

end of 1951 when exploring ideas

developed with dr john smithey's

by the way that's the same john smithy's

that you probably know is credited to

having made the observation that neural

tube defects

are found in babies born by mothers who

are suffering from folic acid

insufficiency and it took some

50 years from the discovery of smithies

of this association between b

vitamin deficiencies and anacephaly and

neural tube defects the most common

birth defects

before that was generally accepted so in

these discussions

among humphrey osmond abram hoffer and

john smithes was born

this niacin concept and he goes on to

say we thought that schizophrenia might

be caused

by disorder of adrenaline metabolism

in which the body produced a substance

with metabolic toxicity that induced

psychological effects that were similar

to that of say some of the psychotropic

drugs like

mescaline or d lysergic acid diameter

lsd

these ideas have since been called the

adrenaline or adrenochrome metabolite

theory of schizophrenia

and it’s a special example of that

particular theory

so i think that these conceptual

frameworks which maybe

were dismissed early on when they were

first presented and published

are now being revisited in the age of

metabolic medicine in the age of network

and systems biology

now that takes us into a further

reflection

on dr pauling’s work because what we

really said is that

maybe there’s something here about

general function

that is related to immune defense and

related to cell repair and

related to cell replication it has to do

with individual nutritional status and

has its roots in this concept of

ortho-molecular medicine

i found a very interesting example of

this that appeared in the journal

neurology in 2008

volume 71 page 1856 in which

the investigators this is a group from

the va medical center in

oklahoma city reported that intervening

post stroke

in patients with intensive nutritional

supplement program

improved significantly their outcomes

and they went on to say that intensive

nutritional supplementation using

readily available commercial

preparations

was found to improve motor recovery in

previously undernourished patients

receiving intensive inpatient

rehabilitation after stroke

and therefore again a induced effect in

this case a stroke event

may enhance the level of need of

specific nutrients

for improving outcome in a post-stroke

situation

so again it’s a whole series of

variables genetic uniqueness coupled

with environmental factors give rise to

the individual need

for specific nutrients and one size

doesn’t fit all and it’s not just on the

back of a cereal box

that you learn about what the level of

nutrients are for optimal function of

that individual

so i think that’s a very very

interesting conceptual framework as it

pertains to this whole

emerging theme that dr both pauline and

dr hoffer talked about

going back to revisit the vitamin c and

cancer story that was first described by

dr pauling actually this was a fully

engaged

discussion when i was at the pauling

institute as a research

scientist back in the early 1980s

actually at the time that i interviewed

dr pauling

and as you probably know there was a

very strong criticism of his concepts of vitamin c in cancer the u.n cameron

linus pauline concept and in fact

dr mortel who is one of the principals

in oncology at mayo clinic

made a very big story about the bunking

supposedly the vitamin c cancer

connection

but yet now we come to the more recent

period of the 21st century and we see

this magnificent

bit of work and paper that’s been

authored by dr balls fry and

steve lawson from the linus pauling

institute at oregon state university

this appeared in the proceedings of the

national academy of sciences

august 12th 2008 on page 11037

and in this particular paper they talk

about vitamin c

and cancer being revisited in light of

the more recent

work that’s been published on vitamin c

in cancer

by chanadal entitled pharmacological

doses of ascorbate act as a pro-oxidant

and decreased growth of aggressive tumor

xenographs and animals this was another

proceedings of the national academy of

sciences paper in volume 105

in 2008 and you probably also know that

there’s some extraordinary work that’s

been

done at the nih looking at the graded

doses of vitamin c

in humans as it pertains to individual

needs

showing the diversity of need using in

situ kinetics

this is mark levine’s work

endocrinologist at nih who has found

that the level of need of vitamin c is

far greater than we thought from person

to person

and then we get into therapeutic doses

of vitamin c where we’re actually using

vitamin c intravenously

as a potential selective pro-oxidant to

induce in cells

that have been transformed that have

poor antioxidant defense mechanism

selective alteration in their reactive

oxygen species production

causing internal cell suicide to occur

in apoptosis of those cells

and so what we’re starting to see is a

millimolar concentrations of

extracellular vitamin c

kill cancer cells in these xenograft

animals but not normal cells

once again reopening what dr pauling had

talked about with dr cameron back in the

1970s and 1980s again

new methods of understanding of the role

that particular augmented levels of

certain nutrients in this case vitamin c

might have as therapeutic agents safe

non-toxic therapeutic agents

so i think the story is not over it’s

continuing to be revisited and what dr

pauling talked about in this interview

in 1982

is still emerging to be seen today in

fact in a

very nice paper that was authored by dr

leonard john hoffer

and dr mark levine this was a phase one

clinical trial of iv

ascorbic acid and advanced malignancy

it’s a human intervention trial

that was published in the annals of

oncology volume 19 page

1969 and 2008 this group of

investigators reported

that high doses of intravenous vitamin c

was well tolerated

they were unable to demonstrate in this

phase one study and a cancer activity

when administered to patients with

previously treated advanced malignancies

however what they say is that there

might be benefit

synergistic administration of vitamin c

intravenously

with other cytotoxic or redox active

molecules to enhance the cytotoxicity in

a selective way

so work is still ongoing right we’re

still learning more about the story

we’re still

learning the difference between

nutritional needs of the individual

as determined by their genetics and

therapeutic nutrition what we call

nutritional pharmacology

enhanced levels of specific nutrients

beyond

that that you would use for normal

maintenance for

therapeutic application in disease

states or environmentally altered

physiology we still have a lot of

confusion in the epidemiological

literature about how

important are some of these antioxidant

vitamins in helping to

protect function and enhance health over

the long term and reduce the risk of

disease

we have papers like that that appeared

in the journal of american medical

association in 2008

this is in volume 300 page 2123

entitled vitamin e and c in the

prevention of cardiovascular disease in

men

and in this large long-term trial of

male physicians

it was reported that neither vitamin e

or c supplementation reduced the risk of

major cardiovascular events

and the data provide no support for the

use of these supplements for the

prevention of cardiovascular disease

however again we have to ask the

question is there data lost

in the mass should we be stratifying the

data should we be looking at those

cohorts that are most genetically unique

and susceptible should we

be screening for biomarkers that are

more likely to be responsive so that we

don’t lose them in the mass of the

non-responders because

we didn’t tease out those that are most

uniquely at risk

the same thing can hold true for sodium

restriction and hypertensions or

cholesterol dietary restrictions in

hypercholesterolemia

there are a myriad of examples of

individuals

who have specifically higher risk to

certain things

as a consequence of their environmental

choices versus the body politic

one can even use gluten as an example

where you say well

not everybody has gluten sensitivity but

those individuals that do have gluten

intolerance

the food which may be good for one

becomes a poison for another

and therefore they may be lost in the

mass of a large study but they’re very

real for those people that end up with

celiac sprue and who may be

statistically an aberration in a large

study but for them eating wheat is very

dangerous

by the same token we might say that but

could be applied to things

like these roles that various vitamin

supplements and nutrient supplements

have

on modulation of relative risk in

individuals with unique susceptibility

their data points get lost in the mass

of those that are non-responders because

not everybody needs the same thing and

we make decisions from the law of

averages

however dr roger williams as you know

said something very powerful about this

he said quote nutrition is for real

people statistical humans are of little

interest

in quote yet as we look at the history

of the way we learn about

therapeutic applications of various

agents we recognize that we often apply

them to 70 kilogram mythical humans

the statistical average we regress to

the mean sometimes you can regress to

the mean and lose all your value of

specificity

i believe in this age of personalization

in genomics

what we’re going to recognize is that we

lost a lot of very important data by

just throwing them

out as the law of the averages as losing

them in the noise

the same thing might even be true for

looking at autism

and the relationship of autistic

disorders to

mmr vaccination it may be in the gross

level of children that there is very low

penetrance

of the susceptibility to mmr being the

ideological

trigger for autism but in individual

children

of small percentage this may be a real

trigger for immunological

activation and as a consequence for them

they end up with a neurological risk

that is lost in the

average of means so what i would really

suggest is that we’re moving from this

massification concept of medicine to a

personalization concept

of medicine the individual has primacy

the statistical human is of lower

interest it’s very

much easier to do statistical studies

and to group everybody together and then

to do

kind of a parametric analysis and think

of things as univariant and

get your t tests and your p values

looking at agent x against outcome y

and do single vision analysis that makes

it fairly simple

it’s much more complicated when you

start stratifying and looking at

differential effects and

individualization and biochemical

individuality and ortho molecular and

systems biology that’s certainly a more

complicated situation

but if we have squeezed out all the

value the low hanging fruit so to speak

of the single agent again single outcome

maybe it’s time

if we’re really going to rectangularize

a survival curve for

compressed morbidity and increase the

health span

that we start to look at this new model

this systems biology model this

differential biochemically stratified

model looking at individuality that is

really born out of the discoveries of

the archibald garage and geneticists of

the transition of the 19th to 20th

century and moving into the

transition of genomics as a paradigm in

the 21st century

and ultimately leading into systems

biology which is the future of where

functional medicine and functional

attrition is going

so i hope that you appreciate that what

you have

just witnessed in listening to the

interviews with dr pauling and dr hoffer

is really the birthing of what has taken

more than a hundred years to

evolve and to mature this paradigm shift

in thinking this frame shift in the way

we see the origin of disease this new

lens of filtering information through

it’s not just an individual therapy that

we’re talking about

it’s a conceptual shift in the framework

of how we understand and manage

chronic age-related diseases at the

individual level

at the patient-specific level at that

moment that we’re in the exam room with

that patient

at that sentient humanistic level of

discourse about

how to manifest the appropriate program

for them

not the program for the average but the

program for that individual patient as

they present with their antecedents

their triggers exposing them to their

mediators which ultimately then creates

their signs and symptoms

this is the functional medicine model

this is what we’ve been talking about

for now more than 20 years and i believe

that it is starting to

gain traction gain an understanding gain

a

fundamental science that supports the

paradigm

and now the challenge is finding ways to

really apply this

effectively in the clinic and i hope

what you’ve learned from the discussions

with dr pauling and dr

hoffer is that we are on this journey

together

it’s a step at a time it’s an evolving

paradigm but truth is its own vector it

wills out in the end and there is a

fundamental truth to this model

that is emerging that will ultimately

deliver a more effective

patient-centered medicine

that results in better patient outcome

and ultimately achieves what dr

pauling and his wife eva helen talked

about with me years ago when i asked

them

why the following institute of science

and medicine was born

and he said very simply it was to find

ways to reduce human suffering

and i think this model that we’re

describing can deliver

that outcome in a cost effective

humanistic way

thanks so much for listening to this

epic version of functional medicine

update

i think this will stand timeless when we

go back and re-listen

in years to come to dr pauling and dr

hoffer and their prescient view

of the future of medicine functional

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you

Linus Pauling Protocol For Heart Disease.
Linus Pauling Therapy For Heart Disease.
Linus Pauling Protocol / Dr Matthias Rath / Pauling-Rath Lysine - Dr. Linus Pauling Heart Protocol , Lysine Dosage, with Dr Matthias Rath .

Linus Pauling:

What sort of research are

you doing

at the institute well

there are many people researchers

working here at the institute and

i work here too i work along a number of

different lines

i’ve been interested in

superconductivity

substances that carry an electric

current without

any loss of energy because of resistance

and various other scientific problems

some of which have practical

applications i also spend part of my

time

together with the other people most of

the other people here in this

institute working on health and disease

trying to get better control of

diseases that cause suffering to people

especially diseases that cause people to

die

young instead of living out their

life span as

one might expect living to

age 75 or i say now living to age

100 or 110 or 115

i believe that it’s possible for us to

make

very great contributions to

the prevention and treatment of disease

and to slowing down the process of

aging by making use especially

of vitamins and other nutrients

which have been pretty largely neglected

by most medical researchers

all right could he change size barry

please

how okay how how would you

how would vitamin help slowing down the

aging process and what sort of vitamins

should one take to do it

a question that we are have been working

on and

are working on and we’ve been doing this

for about 20 years now

is to what extent

could the process of aging be slowed

down

and disease be prevented and controlled

by ingesting taking

larger amounts of various vitamins

i became interested in vitamin c

ascorbic acid or sodium ascorbate or

calcium ascorbate

different forms of vitamin c all of

which have the same protective

action for 20 years actually for about

25 years but i began working hard on

it 20 years ago i take

i myself take 300 times

the recommended amount of vitamin c

every day and i’ve been taking this

large amount to

over half an ounce a day instead of just

a tenth of a teaspoonful

i’ve been taking this large amount for

many years now i attribute my

pretty good health to the vitamin c that

i’ve been taking

also to other fortunate circumstances

about

my life for example that i got married

in 1923 when i was 22 years old

and it was a very successful

marriage i got along very well with my

wife

she helped to protect me against

stresses of various sorts for

60 years about until her death

at any rate vitamin c

i think when used in the proper

way could slow down the process of

aging more than any other step

that we could take or know about at the

present

time my estimate is that with the proper

use of

vitamin c people could live

25 years perhaps 35 years

longer than they live at the present

time

change size barry why why does vitamin c

why does vitamin c appear to have such a

dramatic effect

on longevity well

vitamin c is different from other

vitamins in some very interesting

ways i think that we should be taking

larger amounts of other vitamins too

but i know more about vitamin c

and its effect on aging slowing down

aging

and protecting us

from diseases of various arts

than i know about other vitamins

one difference between vitamin c

and other vitamins is that

you need large amounts of vitamin c

even the recommended

amount that the british and the american

governments or pseudo government

groups food and nutrition board in the

united states recommend

are much larger for vitamin c than for

other vitamins or 10 20

50 000 times greater than for vitamin

b12

for example the reason for this is that

other vitamins usually work

to speed up certain chemical reactions

in the body

without being destroyed themselves

vitamin c

gets involved in all sorts of

biochemical changes that take place in

the human body

and it is destroyed when it takes part

in these

reactions so you need to get a large

amount

in your diet in order that there will be

enough vitamin c in your body for these

chemical reactions to go on

one of these chemical reactions is

producing a protein collagen

something like gelatin which is

the protein that holds our bodies

together

the substance that makes the blood

vessels

strong and the skin strong and the bone

strong and the teeth strong

you can’t make this substance without

using

up vitamin c so your body is going to be

weak in a structural sense if you don’t

take large amounts of vitamin c

the vitamin c

works in in producing this protein

collagen it

works in such a way

as to make the blood vessel strong

if when people used to die of scurvy

sailors sent out by the british on the

navy naval ships or merchant marine

ships after two or three months of not

getting fresh fruits and vegetables

the sailors would die of scurvy and most

of them

died by internal bleeding the blood

vessels broke open

because vitamin c was not there

to strengthen the blood vessels

another way in which vitamin c works

is to keep

fatty deposits from being laid down

in the blood vessels a disease fatty

deposits

the cholesterol usually called the

cholesterol deposits

that are laid down in the arteries

that are the main cause of heart disease

and of course heart disease is the

principal cause of

death half the people in the united

states and half the people in

britain who die die of heart disease and often

at an early age you’re 30 or 40 or 50

instead of living the standard average

survival time after birth of about 75

years so we need to have a large amount

of vitamin c

another way in which vitamin c

differs from the other vitamins is that

most animals don’t need to have vitamin

c in their food

they do need all of the other vitamins

just the way human beings

do but they make their own

vitamin c so it isn’t a vitamin

for a cow and a horse and a dog and the

cat and the pig and the rat and the

mouse

and they make it and

the amount that they make an animal

my size a goat for example manufacturers

about the amount of vitamin c that i

take every day that’s 200 or 300 times

the amount that the government

recommends for human beings

i remember talking with

a scientist a doctor

who was one of the people who

set the recommendations for

britain’s he was a scot

he said i know that

people would be healthier if they took

larger amounts of vitamin c than the

amounts that we recommend

i think he was recommending 30

milligrams a day

which is as i say 300th of the amount

that i take every day he was

recommending that small amount

he said to recommend the larger amount

would require a complete revolution in

the eating habits

of the british people so

his committee the committee that he was

a member of

was still recommending this small amount

of vitamin c

which they said you could get in the

food

ordinary diet if you include enough

fruits and vegetables

even though he knew

that larger amounts would put people in

better health

and cause them to live longer

and not suffer so much how does vitamin

c

i can understand that vitamin c could

delay

getting heart attacks but how does

vitamin c

extend lifespan well

we know that every time

you go through a period when you are

suffering from a disease

there is a shortening in your life

expectancy

this was pointed out by a

a scientist that i knew a

biostatistician

who was at the university of california

about

35 40 years ago

as the head of the donor laboratory of

medical research and

he gathered together the evidence

suppose that a person has

an attack of

let’s say nephritis

acute nephritis blood in the urine

and then gets over it survives

perhaps is treated survives how much

effect does that have on

his life expectancy well this was the

sort of question

that this friend of mine

hardin jones professor hardin jones

asked

and answered by studying the statistics

and

he found that this shortens life

expectancy by about two years

and if you have a severe attack

of say

well even if you have a common cold

it may shorten life expectancy for a

month or two i don’t remember what his

results

are for the common cold but if you have

cancer

and half the people who develop cancer

survive and the other half

die if you have cancer and survive

then your life expectancy is shortened

by

several years professor jones

said perhaps when we are born

we are born with a certain store of

vitality and that

every attack of disease

that we recover from uses up some of

that store of vitality

and then when it is exhausted you die

well that’s a rather uh simple theory

of aging and death that you’re born with

a certain amount of

vitality and that if you want to live a

long time you should be careful

not to use it up stress

uses up this vitality

there was a there have been several

contributions to the understanding of

aging

a professor in the united states

denim harmon about 40 years ago

suggested that free radicals

chemical substances called free radicals

are responsible in large part for

aging and a free radical

is a molecule that has had an electron

knocked off of it so that it has a

positive charge and

its combining power is changed it has

the ability

to hook on to other molecules in the

body

if it hooks on to a molecule of

cholesterol

it can cause the cholesterol then to

be oxidized and have a greater

probability of being laid down

in the coronary artery in the heart and

causing heart disease this free radical

theory

is one that my associate dr fleming

and people working with him have been

studying

in this institute one interesting

fact about these free radicals is

that vitamin c and also vitamin

e fat soluble vitamin e

both destroy free radicals

a high intake of vitamin c and the high

intake of vitamin e

will help to slow down aging by

destroying free radicals as fast as

they’re formed or we hope that

they’re destroyed as fast as we are

formed

these free radicals are produced in the

body

by certain chemicals

toxic substances that you get

perhaps with your food or in the air

and by high-energy radiation

if you’re exposed to radioactivity

that probably produce that does produce

some free radicals in the body

and may speed up

the process of aging and these vitamins

that have antioxidant properties

can destroy the free radicals and help

to protect

a person against disease so

this is a primary uh

problem or group of problems that we

have been working on

here and continue to work on in this

institute change size bro what

for someone who sees this program with

the size someone who sees this program

and decides they want to start taking

vitamin c

what sort of dose would you recommend

and isn’t it true that the ascorbic acid

will burn the lining of the stomach

taking in high doses no

ascorbic acid is a weak acid

it’s about the same as

vinegar say not a strong acid

you have a strong acid in the stomach

hydrochloric acid

so that ascorbic acid is not a strong

enough acid

to have an effect on the human body

and moreover you if you don’t want to

take ascorbic acid

you can take another form of vitamin c

a salt of ascorbic acid sodium scarbate

calcium ascorbate

magnesium and scarbate if you were

worried even about ascorbic acid just

taking a little baking soda

it will you know it’s an

anti-acid baking soda sodium

hydrogen carbonate so this isn’t

anything

to worry about in fact

ascorbic acid is one or vitamin c

i’ll say is not restrict myself to

scarpic acid vitamin c is one of the

least toxic substances

known i knew a man who took

a quarter of a pound 130

grams of vitamin c every day

for many years a decade

he had cancer and he was supposed to die

in a few months from the cancer

metastatic cancer in his brain and bones

he was also a chemist he used to come in

to see me every few months and

he was able to control this cancer for

13 years

by this large amount of vitamin

c it didn’t cause any

problems from toxicity or any other

problems so you don’t need to worry

about

toxic effects of vitamin c the one side

effect that it has

is that it acts as a laxative

speeds up the motion of the waste

products

in the intestines so that you get rid of

them sooner

if you take enough the amount that i

take 18 grams a day

300 times the united states

recommendation

this amount is the amount that has a

laxative action

for me well this chemist

suffering from cancer was able to take

much more than this nearly

ten times about six times as much

because sick people it is found

uh don’t respond to the laxative

effector of effective vitamin c the way

well people do

this may be a way to allow you to take

larger amounts of vitamin c if you’re

really sick and need to be taking very

large

amounts now as to the question

if a person

recognizes that he can slow down the

process of aging and improve his health

or her health

by taking vitamin c what should he or

she do

you can buy one gram tablet

that’s about 20 times 25 times the

british

recommended amount one of these one gram

tablets does a lot of good one one a day

of these one gram tablets i usually

carry them around in my pocket

and if during the day you know i think

i’ve used up

all my tablets i’ll have to put some

more in my pocket

if during the day i feel sort of tired i

just take another

of these one gram tablets well one gram

a day

less does a lot of good it may not be

enough to keep you from catching

colds unless you at the first sign of

the cold take

several two or three an hour for a few

hours

to stop the cold if you take two grams a

day instead of one gram a day

you’re in a little somewhat better

health or if you take four grams a day

you’re in still better health or if you

take eight grams a day

each time you double the dose you get an

added increment of good health well i’d

like to go up to more than my 18 grams a

day but

the laxative effect prevents me from

taking more

on the other hand i think 18 grams a day

is doing me a lot of good

also i recommend that you not buy

high priced vitamin c a kind of vitamin

c

the the the people who

sell it advertise it say is better than

other kinds

but look at the price see what you how

much you pay for

one gram tablet you shouldn’t pay more

than three or four cents american

uh pennies

per one gram tablet similarly with other

vitamins

don’t buy high-priced ones because the

vitamin

cellar says that these are better than

the cheaper ones

what what a do do you believe that you

should supplement the sea with

more antioxidant vitamins like beta

carotene

and so forth well i

recommend taking the antioxidants

but only the natural antioxidants

not taking drugs

hydroxytoluene i’ve forgotten what there

are several

antioxidants that are

perhaps as effective as the vitamins

but they may have side effects so i keep

away from them

so beta-carotene is closely related to

vitamin a

it’s a precursor of vitamin a

when you take beta-carotene it acts as

an antioxidant

it also is converted into vitamin a

and improves the eyesight and in general

improves the health the advantage to

taking beta-carotene over vitamin

a is that in large doses vitamin

a sometimes has

side effects not not

life-threatening but some people get

headaches

if they take 20 or 30 times the

recommended amount of

vitamin a so i recommend not taking more

than 10 times

the recommended amount but to take

extra beta-carotene then you have

vitamin e and vitamin c

also acting as antioxidants and

contributing to better health and

slowing down the aging process

how far take if someone takes this

regime

what sort of percentage could um or how

many years could they add to their life

would you

i mean as a general rule

the evidence is not complete about

this because there haven’t been enough

people

who have taken these large amounts of

vitamin c

for long periods of time

i’ve made this a particular study of

vitamin c and its effectiveness

in increasing the span

of life i’ve already mentioned

my estimate that i believe that a person

who uses

vitamin c in the proper way starting

early enough in life

can expect to live at least on the

average

25 to 35 years longer

than a person who just has the ordinary

intake of vitamin c

how much additional improvement in

health you can get with the other

vitamins i’m not sure

actually my analysis

of the evidence led me to the conclusion

that vitamin c

alone can increase longevity by 25 years

and when i said perhaps 35 years i was

adding other vitamins

increased intake of other vitamins

and perhaps some other health practices

such as a moderate amount of exercise or

trying to avoid stress

of various sorts if vitamin c

is such a good vitamin to take why

doesn’t the united states government

tell everybody to go out and take

10 grams of vitamin c a day well

probably for the same reason as

at least in part for the same reason as

this

member of the british committee on

vitamins

who said to me when he was visiting here

in california

said to me that he knew that an

increased intake of vitamin c

led to better health but that the

committee couldn’t recommend it because

the british people couldn’t get it

to in their food they’d

they’d have to be doing something else

then

the rest of the reason is that there’s a

sort of

bias on the part of the medical and

nutritional authorities against

vitamin tablets vitamin supplements

i could never get the amount of vitamin

c that i

take by selecting foods it would take

330

6 ounce glasses of orange juice a day

to provide that much vitamin c there’s

no way i could get this vitamin c

except by taking vitamin c as a

supplement

i don’t take 18 one gram tablets because

i don’t want to swallow

this much i buy it as the way you buy

five pounds of sugar as a crystalline

material

i buy a pure crystalline vitamin c

and take it by the spoonful just

dissolved in

water or perhaps an orange juice to

improve

the taste so

there is this bias

can you tell me about the amount of

vitamin c that’s excreted

you know there are a lot of statements

made about vitamin c

that just aren’t true the doctors are

apt to

make these statements and if you take

more than a gram a day of vitamin c

it'll kill you and you know just

nonsense

or that vitamin c will cause you to have

kidney stones

this just isn't true that large doses of

vitamin c cause you to have kidney

stones

and i remember 20 years ago or more

i read that the authorities say that

it doesn't make good sense to take

large doses of vitamin c because all of

the excess over about 100 or 200

milligrams

is immediately excreted in the urine

so you're just wasting your money i

decided that i should

check that i was taking 10 grams a day

i measured i collected my urine for

24 hours and analyzed it for vitamin c

and i found i was losing about a gram

and a half in the urine

so the other 85 of it eight and a half

grams was being put

to presumably good use in my body even

this gram and a half had value

of course because it protected the

urinary tract against

infections it’s a way women often get to

bladder infections vitamin c in large

doses will protect

them cure the bladder infections also

helps

prevent cancer of the bladder cancer of

the urinary

tract so there are a lot of statements

made about the vitamins that just aren’t

true

i don’t understand why the medical

profession

and the old-fashioned nutritionists

which means most of the people that are

talking

authority that our authorities on

nutrition now

continue to say you should

search for vegetables and fruits and

foods that

contain large amounts of vitamins

because to have an increased intake of

vitamins improves your health

but don’t take vitamin supplements this

just seems to me to be

silly here when discoveries are made

for the most part people as a whole

are glad to have them when the first

railroads were built people

in london didn’t say well god didn’t

intend us to go

to manchester on a railroad train

so we’d better go by the horse and

coach taking four days and sleeping

overnight to get to manchester

they were glad to have the railroads to

get there in

a day and similarly when electric lights

came in we were glad

that people didn’t say god didn’t intend

us to have electric lights he wants us

just to burn wax candles or something

like that

but when vitamins were discovered for

some reason

when the vitamins became available at

low prices

for some reasons these medical and

nutritional

authorities have failed to accept the

idea that this

was really a great discovery that the

chemists were making

around 60 80 100 years

ago that these substances exist

that we know how to make them or

concentrate them from natural sources

and make them available

in tablets or as pure crystalline

substances

at a low price i can’t understand this

why they rejected this great discovery

and continued to reject it by saying

take be sure that you get certain

amounts of each of the four foods so

that you get enough vitamin c to keep

you alive and enough vitamin a to keep

you alive and so on

but don’t take vitamin supplements and

especially don’t take them

in the tremendous amounts that that

fellow

linus pauling recommends i just don’t

understand that

you said if i guess take it back to you

know you said that you that a goat

something of your own body weight like a

goat produces vitamin c

themselves but is there any proof that a

goat lives longer

because it does produce the vitamin c

i didn’t hear you said that a goat

for example produces vitamin c

is there any proof that a goat lives

longer because it does produce vitamin c

well i think i can say

you know i mentioned that a goat

the size of a man manufactures

approximately the amount of vitamin c

every day that i take

300 times 200 or 300 times the amount

that the food and nutrition board

recommends for human beings

and i think that the goat isn’t enough

different

from human beings the goat and the cow

the horse and the cat and the rat and

the dog and so on

all of them manufacture these very large

amounts of vitamin c

why does the goat make only the amount

that it makes why not make half that

amount

which would still be a hundred or 150

times the amount that human beings get

and save all of the energy and materials

that it is expending and

make making this large amount and why do

goats continue to make these large

amounts and all these other animals

generation after generation unless

this large amount of vitamin c improves

their health

there’s no doubt that the reason that

the goat and

all of the other animals make these very

large amounts of vitamin c

is that large amounts of vitamin c

are good for the health

so i accept that that’s one of the

reasons that i’m taking the amount of

vitamin c

that i do take could i ask you about

just change the subject slightly about

the use of vitamins and intelligence as

well as just your

you know your body how they can affect

and improve your mind

well the

the brain is a remarkable organ

you know it’s hard to believe that human

beings

are able to think the way that they

do think that they’re conscious of their

own existence

and are interested in what

the world was like a thousand years or

ten thousand years or a million

years ago and that they talk about the

future of the world

and so on other animals don’t do that

the brain cannot function unless

there are certain important substances

present in the brain and one of these

substances

is vitamin c a person who dies of scurvy

will still have a good bit of vitamin c

in his brain because

this process of thinking is so important

that we have developed methods of

pumping vitamin c from the blood into

the brain

even when a person is suffering from

a deficiency in vitamin c a person with

scurvy

will die well of infectious disease

because vitamin c is part of the process

of protection against diseases

and if you are suffering from scurvy

because of not getting enough vitamin c

you have a tendency to succumb to some

infection that you’d be able to overcome

otherwise or from internal

bleeding because vitamin c is needed to

strengthen the blood vessels and when

you have a deficiency the blood vessels

just

break open rupture they’re not strong

enough to resist the blood

pressure and still these pumps work

to pump vitamin c into the brain

so since vitamin c is

obviously required for the functioning

of the brain

there’s a possibility that an increased

intake of vitamin c

would improve the functioning of the

brain

i remember 20 years ago when

a couple of psychologists carried out

a very interesting study in texas

with school children several hundred

school children

they measured the amount of vitamin c in

their blood

and half of these

school children had rather small amounts

less than one milligram per deciliter

the other half had more between one and

one and a half

milligrams per deciliter then they

measured their iq

and there was a five point

difference in iq between the high

vitamin c and the low the high ones were

at 105

the low ones average a hundred

then they gave all of them

some extra vitamin c 90 milligrams

of vitamin c a day for

the school year term

and at the end of that time they took

blood samples and measured the vitamin c

the high ones hadn’t changed they still

were in this range

one two one and a half the low ones had

moved up into that

range there’s a physiological process

that takes the vitamin c out of the

blood if you get more than about one and

a half milligrams and

sends it to the brain or other parts of

the body

so they measured the iq

the high ones hadn’t changed they were

still at 105

the low ends had gone from 100 to

104 i think not quite average 105.

so then summer vacation came

the students went home you know the

difference here between these two groups

of children

the psychologists tried to find the

difference the

income of the family the education

of the parents or things of that sort

there was no

statistically significant difference in

these

quantities but

probably it was the ideas that the

mother

had about food that was the difference

in the one family perhaps the children

were getting orange juice

or other and ate more fruits and

vegetables and then the other

the mother didn’t provide these foods

for

the children that may have been the

reason that they

at any rate at the end of the summer the

low ones were low

again during the summer they were

getting the extra vitamin c in the level

and the blood had gone down

and when they measured their iq it had

gone down

then they got to the vitamin c again for

some months

and they were up equal to

or approximately equal to the high

vitamin c group

their vitamin c went up and their iq

these investigators said they thought

that having this extra vitamin c

not very much 90 milligrams a day

this extra vitamin c increased

their alertness and

awareness that made them a little more

lively in their thinking

and that that was the reason that they

did better on the

iq tests well there have been a number

of studies of this sort and

of course this is a complicated matter

it isn’t easy to carry out these studies

from my analysis of the various studies

i

have reached the conclusion that

in general there is an improvement

not a tremendous improvement but an

improvement

in the apparent intelligence

results of the iq tests of children

if they are given some extra vitamin c

per day there’s a little evidence that

some of the other vitamins and minerals

also if added as supplements

in the recommended amounts have some

effect of the sort

is there going what do you what do you

think the maximum

attainable human lifespan is and is

there going to be

a leap a quantum leap to extend that and

if there is

how will that happen well the

there’s a distribution curve

on longevity so that

the people who have reached the age of

90 only a small fraction i’m not sure

what

has reached that age they have perhaps

five years average life expectancy

when they reach and some of them a

quarter of them perhaps

will reach the age of 100 or less than a

quarter

and they have three or four years life

expectancy

the maximum survival time

there’s some uncertainty about it there

are stories

of people living to be 150 or more but

the maximum survival time is believed

now to be

about 115 years

now i think that vitamin c can

increase the maximum the average

survival time by

25 years from 75 to 100

so i would say the tail end of the

distribution curve will also be shoved

over

by 25 years and instead of living to be

115

that is a single person in the world’s

population or

the western world living to be 115

there will be a single person out of the

thousand million people say living to be

a hundred and let’s see 140

years old

so that’s my estimate

as to the maximum survival time

for human beings in the future

if they all begin improving their health

by taking supplementary vitamin c

do you think there’ll be a does any of

your work here indicate that maybe

genetically by altering the d

by altering the dna could we live beyond

the 140 possibly

in the future

well of course

there is a possibility that

the dna can be altered in such

a way as to increase life expectancy

somewhat this means

introducing an altered gene in place of

a gene

that’s present that limits life

expectancy to some extent

now or just deleting

a damaging gene removing it

now there are perhaps a hundred thousand

genes in an

individual’s complement of dna

that was my estimate 50 years ago and

it’s the estimate that most people

most geneticists most people working in

this field

make at present time a hundred thousand

genes

it would be a big job uh to change one

gene

in the whole human population

or even in an individual a big job and

if that has

just an improvement of one in a hundred

thousand

that you may need to change a thousand

genes

in order to get a really significant

effect on

longevity so i’m not very optimistic

about

that method of increasing

life expectancy but there is a

possibility

that something significant can be

done my associate dr fleming has been

working

on this denim harmon idea about free

radicals

by introducing a gene

into a laboratory

animal in his case the house fly

in order to see whether the gene that’s

introduced

will have the effect of destroying free

radicals

faster and increasing life expectancy

well this of course is closely related

to what i suggest

that you take more vitamin c in order to

destroy the free radicals more vitamin e

in order to destroy the free radicals

what about what about dietary

restriction is there a theory that if

you

is there a theory that if you cut down

the amount of food you at

that you would live longer because in a

laboratory mice dietary restriction

extends lifespan well there is some

evidence that in animals the rats

especially

cutting down on the intake of food

increases

the length of life in humans

we know that people who eat too much and

become obese

live a shorter length of time

than people who have the average weight

or

even somewhat less than the average

weight

so that just the amount of food that’s

eaten

can determine for some people at any

rate

life expectancy

also there’s one food that

is a modern food and that is taken in

large amounts

and is quite harmful

this is ordinary sugar 200 years ago

very few people could get sugar it was

very expensive

our ancestors of a thousand or two

thousand

or five thousand years ago didn’t get

very much sugar

they got a little from sweet

fruits but very little compared with the

amount that people eat

now the average intake of sugar in the

united states

sucrose ordinary white sugar or brown

sugar doesn’t make any difference it’s

all sugar

the ordinary person in the united states

the average person

eats a hundred pounds of sugar a year

the average person in britain eats 120

pounds of sugar

per year there’s no doubt that sugar is

harmful

i recommend in my writings i say

cut down your sugar intake to half

or even less than half of the average

amount don’t add sugar to

tea or coffee and don’t eat sweet

desserts except

occasionally don’t don’t eat sweet

desserts

regularly and that will increase

that will improve your health and

increase the length of your life

so there’s one there are two ways

don’t eat so much that you become obese

keep your weight down and

cut down on your sugar intake

i myself have always have since i was 40

years old

eaten a rather smaller amount of protein

than most people eat i i’m not a

vegetarian

for well i’m not an ovo lacto-vegetarian

that

i i eat eggs and milk

quite a bit eggs and milk but i also

eat meat occasionally but i don’t eat

a large amount of meat my protein intake

is not much more than the amount that

i need to replenish the proteins in my

body in my case that’s 40 grams a day

about an ounce and a half of protein a

day

most people eat two or three times for

four times that amount of

protein so it is possible to

improve one’s health by

dietary methods i don’t recommend

going on crash diets to get thin

and then when you’re off the diet eating

a lot so you then become

fat again there’s evidence that this

zigzag method

of controlling the weight is really

harmful

you have to limit your intake of food

if you have a tendency to obesity you

have to keep your intake of food

down in a steady manner day after day

after day

very tight could i ask you sir to tell

us how old you are

and how how how long do you hope to live

you know i was born in portland oregon

and then moved to a small town in

eastern oregon condon

oregon population about 500 then in

population about 500

now and i was born on the 28th

of february 1901

so now in 1991 i’m

90 years old uh

i can’t predict how long i’m going to

live

i’m in pretty good shape with respect to

my

general health nothing to complain about

to i’m not so steady on my pins

as i used to be i don’t run very much

i avoid running and

i suppose my muscular strength

is decreased

with passage of time but i don’t have

any

disease at the present time

the statistics suggest that i if

if i’m an average person i’d live five

years longer

i don’t think i’m an average person

because i

eat i take so much more vitamin c

and other vitamins than the average

person takes

so i would say i have a

probable life expectancy of 10 years now

but if i’m far enough out on

on this distribution curve i may well

live even longer than that thank you

very much

excellent thank you very much that was

quite a piece of equipment that it is

has the ability to convert vitamin c

into other chemicals that the body may

require and not getting an adequate

supply is there any truth to that

oh yes yes there is so

well i’ll ask the question then

christopher yeah

could you tell me how vitamin c also

makes other nutrients and vitamins

well i mentioned that 20 years ago

i measured the amount of vitamin c that

i was excreting in my

urine when i was taking 10 grams a day

and i was losing only a gram and a half

in my urine well i was taking this 10

grams

by mouth some of it didn’t get into the

bloodstream but stayed in the intestinal

contents and

it wasn’t really wasted it was

protecting my lower bowel

against cancer of the colon and

rectum so it wasn’t wasted and i’m not

sure

how much about half of what i ingested

or perhaps 60 percent

got into the bloodstream but only a gram

and a half was eliminated in the urine

so i thought what happens to the rest of

it

it must be changed into certain

oxidation

products of vitamin c

and in fact we got evidence

18 17 years ago 18 years ago

that if you take large doses of vitamin

c

the body responds by

developing a procedure for converting

the vitamin c

into these other substances

a procedure that it didn’t have

operating before

because there wasn’t enough vitamin c

being

ingested in the food to allow

any of it to be converted into other

substances

so we have for 18 years been studying in

our institute

the value of these other substances

that you get in your body if you take a

large amount of vitamin c

regularly but don’t get in the body if

you don’t

one thing that’s been found is that

these substances

are more effective against protecting

the body

against cancer which is what we’ve been

studying

than vitamin c itself

so one way one reason for taking large

doses of vitamin c is that the body

responds

by converting some of the vitamin c

a large part of it in fact into other

substances

that are valuable for the health

could you just could you define what

these other substances

substances are well i could

very briefly you know i’m a chemist

there are about 10 million chemical

substances

that have been described in the

scientific

literature and i know the names of a lot

of them

and i could give chemical names but we

do know that these substances

are oxidation products of vitamin c

they’re similar to vitamin c

but not exactly the same they’ve been

they’ve had some more

oxygen atoms added

there hasn’t been enough work carried

out has

yet to permit me to say

what the mode of the mechanism of

action of these other substances in

improving the health of human beings is

we’ve carried out some studies to check

what these other substances do but

to determine the molecular mechanisms is

a hard job that we haven’t

succeeded in tackling as successfully

as yet okay lovely cut

excellent thank you very much sir that’s

great

right it was very very good i wonder if

we could put you at your desk

now surely and i’ll take the mic off and just as if

Linus Pauling Protocol For Heart Disease.
Linus Pauling Therapy For Heart Disease.
Linus Pauling Protocol / Dr Matthias Rath / Pauling-Rath Lysine - Dr. Linus Pauling Heart Protocol , Lysine Dosage, with Dr Matthias Rath .

Linus Pauling's Lecture on Vitamin C.

I'm going to speak about vitamin C and

cancer I hadn't planned to work on

cancer at which I work that I began in

fact ten years ago nor to work on

vitamin C or other vitamins as I began

around 16 years ago instead I got into

these fields by accident or through some

concatenation of circumstances that just

to left me led me into these fields I

started to work on hemoglobin after

having worked on simpler molecules for

14 years you know 1936 and then the next

year I began some work together with my

students of course in the field of

immunology then in 1945 I had an idea

that sickle cell anemia might be a

disease of a molecule rather than a

disease of a cell dr. Harvey tano a

young physician came to study with me

and he and I began to check up on this

idea in 1949 together with two other

students singer and Welles we published

a paper sickle cell anemia a molecular

disease after being with me 8 years dr.

attano was ordered as an officer of the

Public Health Service to move to

Bethesda and I decided that I should

give up work on the hereditary hemolytic

anemias didn't seem to me very sensible

of me to be competing with such an able

and vigorous young investigator as dr.

Tommo so I thought why shouldn't I look

at other diseases to see whether or not

they are molecular diseases and they

might as well be important diseases

because nobody else very was working in

the field except by that time there were

a good number of hematologists studying

the hemoglobin enos I thought well I

might work on cancer or I might work on

mental disease and I rejected cancer for

two reasons one it seemed to me that it

was just too complicated a field for me

to be involved in and second many people

many investigators were carrying on

studies in the field of cancer whereas

in 1954

very few people were working on mental

disease that was the mental disease our

Studies on schizophrenia and mental

retardation that got me into vitamins

after about 10 years of work in this

field I ran across some papers

publications by doctors offer and Osmond

in Canada Saskatoon Saskatchewan Canada

they made a report that really

astonished me they said that they were

giving large doses of nicotinic acid or

nicotinamide to schizophrenic patients I

knew of course that a little bit of

nicotinic acid or nicotine the mind must

be ingested day after day five

milligrams perhaps a little pinch to

keep a person from dying of pellagra

so I knew that these substances the

pellagra preventing factor are very

powerful substances five milligrams a

day will keep a person from dying of the

disease and yet these substances are so

lacking in toxicity

that hover and osmond we’re giving a

thousand or 10,000 times this

physiologically effective amount or

pharmacologically effective therapeutic

amount to schizophrenic patients

nobody knows just how toxic they are

people have taken 100 grams a day or

even more without any serious side
effects
I thought house tarnishing that there
are substances of this sort that have
physiological activity were a tremendous
range of concentration thousand folder
ten thousand full range of concentration
in fact I found that Milner had been
giving large doses of vitamin C in the
double-blind experiment to schizophrenic
patients and he reported that several
grams perhaps a thousand times the
amounts that will prevent scurvy most
people several grams of ascorbic acid is
also effective more effective than a
placebo for the schizophrenic patients
well the idea that such substances exist
which are effective in one way or
another over a tremendous range of
concentrations caused me to decide that
this field of medicine deserved a name I
invented the word orthomolecular to
describe built also molecular means the
use of the right molecules in the right
amounts the right molecules are the
amount the molecules that are normally
present in the human body and the right
amounts are the amounts that put people

in the best of health well I was
interested in infectious diseases in
relation to vitamin C originally but in
1971 Charly Huggins asked me to speak at
the dedication of his new cancer
research laboratory I thought I must say
something about cancer so I remem
that I had read a book published in 1966
by um Cameron a surgeon in a hospital in
Scotland who had been a general surgeon
who had however all of his life that’s a
surgeon being interested in cancer he
formulated the general argument in this
book hyaluronidase in cancer this
argument was this he said the body has
protective mechanisms the immune system
for example if we could potentiate these
the natural protective mechanisms they
might provide additional protection
against cancer as Professor the leaves
pointed out we have many patients most
patients with cancer circulating cells
but not all of them develop metastasis
those whose immune systems are
functioning well have a smaller chance
of developing metastatic cancer than
those whose immune systems are not

functioning well well I thought we know one thing about vitamin C it is required for the synthesis of collagen if them persons with cancer were to be given larger amounts of vitamin C they would be stimulated to produce more collagen fibrils in the intercellular cement that holds the cells and are all tissues together and these tissues might become strengthened illness away to such an extent that tells Cameron pointed out without mention of vitamin C to such an extent that they could resist infiltration by the growing malignant tumor dr. cameron saw a newspaper account of my talk and wrote asking how much vitamin c to give i replied he should give the patient’s ten grams a day ten thousand milligrams two times the usually recommended amount he began cautiously with one patient in Vale of Leven Hospital LOC Norman side Scotland and was astonished by the response of that patient to such an extent that he gave 10 grams of vitamin C a day to a second to terminal cancer patient and untreatable patient receiving no treatment other than the vitamin C and narcotics to control pain

and then a third and fourth and more and

more patients as he became more and more

convinced of the value of this substance

for patients with cancer I may have

started out now with the first slide

well I think and perhaps this is the

message that I should emphasize I think

that the people in the field of

nutrition scientists in the field of

nutrition which up to 15 years ago

seemed to me to be a terribly boring

subject have been off on the wrong track

they have said that vitamin is needed an

organic compound needed in small amount

to prevent to death by corresponding

deficiency disease and they have striven

very vigorously over a period of 40 or

50 years to find out just how much each

of these substances is needed to keep

people from dying I believe that the

problem that should be attacked is that

of finding the intake that would put

people in the best of health not just

the amount that will keep them from

dying the nutritionists who refer to

their recommended dietary allowances are d8 by saying that these are the amounts

that

will prevent most people from developing

the corresponding deficiency disease

most people in Arden they’re a good

health what they should say is it will

prevent most people who are in or what

is ordinary poor health from dying of

the corresponding deficiency disease to

be and what not to be ordinary good

health

they need to be ingesting the optimum

amounts the proper amounts of these

valuable substances next slide there’s

an interesting difference between

vitamin C and the other vitamins the

other vitamins thiamine paradox in

riboflavin vitamin A in tirana are

required by essentially all animal

species vitamin C is not required by

most animal species 99% or more of

animal species synthesize ascorbate they

do not rely on the dietary sources of

the substance and if I ask why do these

animals continue to synthesize vitamin C

even though they may be getting large

amounts by ordinary standards in their

diet to several grams a day for an

animal the size of a man the answer

surely is that they continue to

synthesize a scarbee because the amounts

they get on their diet are not enough to

put them in the best of health

not enough to make to put them in the

fifth set condition in the environments

in which we live next slide man is one

of the few unfortunate species of

animals who are in rather poor health

generally because of not having as much

a score paid tells corresponds to the

best of health when I looked at 150 raw

natural plant foods taking the amounts

that would give 2500 kilocalories of

energy I found that for thiamine and

other vitamins there was perhaps three

times or five times as much of the

vitamin this is now recommended as you

get in modern diet on the average but 50

times as much vitamin C as is

recommended and I thought this is an

indication that larger amounts of

vitamin C are needed because animals are

getting these larger amounts but

continue to make ascorbate next slide

the next slide please

another interesting fact is that the

committee that recommends in the diet

the food for monkeys experimental

monkeys recommends 70 times as much

vitamin C monkeys also require exogenous

vitamin C they are primates indle all of

the primates require this vitamin

seventy times the amount recommended for

human beings I think that this is

understandable monkeys are very valuable

experimental monkeys if you’ve spent

months carrying out studies with them

and then suddenly your monkeys die it’s

a real tragedy so that a great effort

has been made to find out how much

vitamin C will put the monkeys in the

best of health no one has gone to the

effort to find to carry out

corresponding studies for human beings

next slide well I mentioned that these

new species of animals synthesize ask

are paid the amount they synthesize

depends on the size of the animal

small animals produce a small amount

large ones a large amount proportional

to body weight not to surface area

two-thirds power of the body weight but

to body weight and the amount produced

by different animal species is between

40 and 400 times they usually

recommended intake for human being

averages 10 grams per day per 70

kilogram body weight that’s why I wrote

to you and Cameron to say that 10 grams

a day is the amount that he should try I

might say that the pharmacologist

sometimes say that 50 milligrams of

vitamin C per day is a physiological

intake and that 10 grams a day use a

pharmacological intake that the vitamin

is being used to subtract I would say

that 10 grams a day is the proper

physiological intake and 100 grams a day

might be called a pharmacological intake

and people have taken that amounts

amount people have received 120 550

grams of sodium ascorbate today by

intravenous infusion to control serious

diseases without any side effects and

have taken similar amounts by mouth next

slide so this is the conclusion that I

have reached I’ve already stated that

next slide please

well vitamin C is required for

synthesizing collagen and I think it

might well strengthen that more whole

tissues next slide the reason that it is

required is that collagen is formed from

pro collagen by hydroxylation of pro

lille and serial residues and there are

other hydroxylation reactions this one

and other similar reactions do not take

place except with use of vitamin c next

slide well collagen the value of

increased intake of vitamin c under

several circumstances has been known for

a long time and surgeons for over 40

years have been recommended in the

better surgical textbooks to give all

surgical patients a gram or two or three

grams of vitamin c per day in order to

facilitate

wound healing healing of broken bones of

burns to take care of peptic ulcers

periodontal disease physicians have

known dentist to have known about this

they don’t all practice it but it’s been

alone next slide here is a reference to

un Cameron my associate for ten years

now in this work and to his book

hyaluronidase and cancer next slide and

I argued then in 1971 have stated on

this slide that the increased synthesis

of collagen might strengthen normal tissues to a significant extent the next slide since then a large amount of information has been gathered about the relation between the intake of vitamin C and various aspects of the immune protective mechanisms valence fakin others have shown that antibodies IgG and IgM are produced in larger amounts with the increased intake of ascorbic Fagen showed that a component of complement involving collagen like sequences of amino acids as shown by Professor Porter is produced in larger amounts the Buster Genesis of lymphocytes occurs at a greater rate and the activation of cytotoxic macrophages has been shown to be increased interferon production is reported to be greater with a greater intake of vitamin C I might mention that there’s been a tremendous amount of interest in interferon for the treatment of cancer one important point here is that to treat a patient with interferon costs about a thousand times as much as to treat him ascorbic acid dr. Cameron says to people

who ask about interferon take ascorbic

acid and synthesize your own urine next

slide please

this is the only study on this vitamin C

that’s been carried out in the National

Cancer Institute of the United States

you know motoric radium and vinegar gave

vitamin C 5 grams a day for three days

to volunteers the rate of blaster

genesis of lymphocytes under antigenic

stimulation doubled with this intake

when 10 grams a day for three days was

given the rate tripled and when 18 grams

a day for three days was given the rate

quadrupled it’s known that a high rate

of Buster Genesis of lymphocytes in a

cancer patient too is correlated with a

better prognosis longer survival than

the low rate of blast or Genesis next

slide ascorbate seems to have a

significant prophylactic value here I’ve

listed seven studies relating to vitamin

C and cancer studies in which when a

number of environmental or nutritional

and nutritional factors were correlated

to with Lee morbidity from cancer

vitamin C turned out to have the highest

correlation coefficient negative of
course to be the nutrition the factor
that seemed to be most strongly related
to morbidity from cancer next slide an
interesting study was carried out by dr.
de costs and his associates the cost is
now the head of surgery and the Memorial
sloan-kettering Cancer Center in New
York City he found that 3 grams a day of
vitamin C given to
patients with familial polyposis caused
the polyps to disappear in half of the
patients I’ve suggested that he give 10
grams today in the new trial which is
underway but he is sticking with 3 grams
a day because of his worry about toxic
side effects of large doses well there
just aren’t any toxic side effects of
large doses of vitamin C we talked about
kidney stones has essentially no basis
whatever no cases in the medical
literature damage the liver doesn’t
occur although it’s sometimes mentioned
without references next slide please
Bruce in Toronto has used the Ames
method of testing for mutagens to study
fecal material the contents of the lower

intestinal tract there are many new to

jams that show up and they of course

when tested by with much difficulty

various muta gems for carcinogenic

activity have usually been found

mighty percent of them have been found

to be carcinogenesis given my mouth to

patients the number of mutagens in the

fecal material was much less 1 this is

presumably a mechanism for preventing

cancer of the lower gastrointestinal

tract I find when I take 10 grams a day

which is the amount that I do take that

half of the vitamin C 5 grams

remains in the contents of the

gastrointestinal tract presumably them

providing protection against this tract

and in particular of course destroying

preventing formation of my Trostle means

which are a cause of gastric cancer and

other cancers but also destroying other

mutagens

you know the material in the

gastrointestinal tract five grams gets

into the bloodstream of this 30% one

point five grams is eliminated in the

urine and provides protection of the

urinary tract on the way out and the

other three and a half grams works throughout the human body next slide here’s some clinical tests all that have been carried out that have been reported us yet I made a mistake when I wrote the copy for this slide the tamarins last study involves 300 terminal cancer patients treated with ascorbate compared with 2,000 matched controls in the same hospital it with these studies a hundred against a thousand matched controls there was essentially random distribution of patients between dr. Cameron on the one hand and the other surgeons and physicians in the same hospital on the other over a period of time when Cameron was giving the patients with terminal cancer untreatable cancer vitamin C and the other surgeons and the physicians were not so that we have a sort of randomized allocation of students of patients to the two groups moreish again Murata our associates of our Institute in California Marathas were there two summers and they their work is carried out in the hospital in Japan next slide the first thing that dr. Cameron and his

collaborators the surgeons working with

him noticed was that the patients feel

better when they receive a scar Bay

cancer patients usually are pretty

miserable don’t feel well they have poor

appetites and don’t eat well these

patients lost their cachexia they began

to feel lively feel well have good

appetites and then there were other

responses that were

noted and later on of course it was

found next slide it was found that they

survived longer than the controls and

this slide shows survival times of the

hundred patients with untreatable cancer

who received the scar bait and the

thousand matched controls ten matched to

each of the ascorbate treated patients

who had also reached the untreatable

stage when no therapy was administered

to them except morphine or diamorphine

to control pain after the death of

untreatable if a the controls lived on

the average 54 days and the ascorbate

treated patients who lived on the

average about a year much longer and of

the controls only three in the thousand

three tenths of a percent survived over
four hundred days four tenths of a
percent over a year after untreated
bility whereas there were 16 percent of
the ascorbate treated patients who
continued to survive and these patients
continued to survive for a long time as
much now as eight years after having
been considered to be terminal with a an
expected survival time of only a couple
of months next slide
these are the results of similar
observations made in fukuoka tori kai
hospital in japan fukuoka japan again
there's a low ascorbate group receiving
less than five grams of vitamin C per
day in captain Cameron's patients in
Scotland the Louis Carbon group received
very little perhaps 50 milligrams today
and the highest garbade group receiving
more than five grams a day average of
about 15 grams a day that occurs the
survival curves are essentially the same
as far
the study in Scotland the next slide
these graphs represent a breakdown of
comparison of a hundred the first

hundred ascorbate treated patients in

Scotland and the thousand matched

controls here we have 17 patients with

cancer of the colon that had reached who

had reached the untreatable stage

compared with a hundred and seventy

matched controls and the controls died

off pretty rapidly the Scarb a treated

patients lived on a number of them here

a third of them are more over a year one

of them was still alive in 1978 with

cancer of the stomach bronchus and

breast the situation is rather similar

next slide

cancer of the kidney rectum bladder

ovary there doesn’t seem to be much

difference in the response of patients

with different kinds of primary cancer

to ascorbate there are some

statistically significant differences

but the difference between living a year

longer on the average and living seven

months longer in general I would say

these patients who have reached the

untreatable stage and in Scotland the

untreatable stage for patients adult

patients with solid tumors

gastrointestinal tumors and so on

do not receive chemotherapy so that these patients in general had not been treated with chemotherapy in general I would say that the evidence indicates that to give them ascorbic acid leads to greater survival time as well as better well-being during the period of survival than treatment with chemotherapy does the standard sorts of chemo therapy that are used now next slide another trial carried out it was by Creegan Martel and others in the Mayo Clinic the difference between that trial and the trials in Scotland and Japan is that 88 percent of the patients 123 patients in the Mayo Clinic trial had received chemotherapy only four percent in Vale of Leven Hospital we argued dr. Cameron and I before the Mayo Clinic trial was begun that they should not use patients who had had their immune systems badly damaged by courses of chemotherapy because of our conviction our feeling that vitamin C works largely by stimulating production by stimulating the immune system next slide well our conclusions with the possible and I just quote from our book the last sentences

in our book cancer in vitamin C with the

possible exception of during intensive

chemotherapy we strongly advocate the

use of supplemental ascorbate in the

management of all cancer patients from

as early in the illness as possible next

slide we believe that this simple method

measure would improve the overall

results of cancer treatment quite

dramatically not only by making the

patients more resistant to their illness

but also by protecting them against some

of the serious and occasionally fatal

complications of the cancer treatment

itself next we are quite convinced that

in the not-too-distant future

supplemental ascorbate will have an

established place in all cancer

treatment regimes next slide now the

advantages it is a North alekhya leur

substance every human being has vitamin

C in his body so long as he continues to

live

has very low toxicity no serious side

effects make some patients feel much

better

very low cost it’s compatible with most

or all other methods of treatment the

exception being chemotherapy of course I

think that chemotherapy should be used

with childhood cancer leukemia Hodgkin’s

disease possibly together with vitamin C

but my own feeling is that vitamin C for

adults with solid tumors is probably

preferable to chemotherapy well I can

end up by saying that in the United

States the medical professionals an

organized group has not accepted these

ideas individual physicians I would

judge have because we get hundreds of

letters and telephone calls from

individual physicians who have developed

cancer asking for more information thank

you

[Applause]

[Music]

[Applause]

for a number of years I have thought

that there should be people who might be

said to practice theoretical medicine

there are thousands of theoretical

physicists and they have of course made

important contributions to science and

hundreds of theoretical chemists some

theoretical biologists why shouldn't

there be people in the field of

theoretical medicine my experience has

indicated that many workers in medicine

and such fields as nutrition are not

able to understand and appreciate the

theoretical and rational arguments

cancer is one of the most important

causes of human suffering people buy of

course they get old and in the course of

time die but the amount of suffering

associated with death is different for

different causes of death and in fact

for different ages death had an advanced

age very often involves considerably

less suffering for the person himself

and for members of his family and others

then death at an earlier age if we could

increase the length of life so that more

people died at an advanced age and could

eliminate cancer and especially

unpleasant way of dying and then there

would be a decrease in the amount of

human suffering I read the book by a man

dr. um Cameron of Scotland number of

years ago the book was published in 1966

it's title is a hyaluronic acid and

cancer he pointed out that not very much progress was being made in the attack on cancer by producing anti-cancer drugs and changing ways of irradiating a person with high energy radiation in fact the National Cancer Institute has spent billions of dollars thousands of millions of dollars during the last 20 years 800 million dollars is its budget this year and yet the mean survival time of cancer patients has changed very little for a few percent of these patients with certain rather special kinds of cancer there has been a significant improvement but for the great majority more than 95 percent of the patients who have important kinds of cancer there’s been essentially no change as a result of all of the effort all of the expenditure of money Cameron in his book said that perhaps an effective way of attacking the problem of cancer would be to bolster up the body’s natural protective mechanisms many almost every cancer patient - after surgery when the primary cancer is removed has millions of circulating malignant cells and yet not every one of them develops metastases in many of them

these circulating malignant cells seem

to be kept under control this is little

doubt the result of an effective immune

surveillance the body’s natural

protective mechanisms succeed in

getting control over the malignant cells

and the captain patient does not succumb

to cancer

Cameron mentioned that malignant cells

many kinds of malignant cells produce

the enzyme hyaluronidase which then

attacks the hyaluronic acid in the

intercellular cement of the surrounding

normal tissues and weakens these tissues

in such a way as to permit infiltration

by the malignant tumor and his book them

in his book he went on to express the

hope that some way could be found to

stimulate the production by the patient

of him increased amount of physiological

hyaluronidase inhibitor which would

inhibit the action of the hyaluronidase

in this way protect the surrounding

tissues and permits the tumor to be

brought under control for a number of

years he tried to find some such way by

giving to terminal cancer patients

various hormones and mixtures of

hormones thinking that sooner or later

he might find a hormone that would

stimulate the production of the

hyaluronidase inhibitor and year after

year he was disappointed the patients

with terminal cancer died just about the

rate the standard rate there was no

effective treatment to this sort i was

asked in 1971 to give a talk at the

dedication of the new laboratory for

cancer research at the university of

chicago the bell

laboratory in fact Taz alias had been

asked to give this address and have

agreed to come but a week or ten days

before the occasion the dedication he

sent a telegram saying that he was ill

and was not able to come so you argan

Isis the people at the bent Mayo

laboratory called me and asked if I

would come and speak I needed to say

something about cancer and so I

presented an argument as follows we know

one thing about ascorbic acid and have

known for forty years that is that

collagen the principal component

proteinaceous component of connective

tissue is not synthesized except in the

presence of ascorbic acid ascorbic acid

is required for its synthesis connect

the intercellular cementum tissues

contains not only these

glycosaminoglycans hyaluronic acid but

in long chains but also long fibrils of

collagen which act like the reinforcing

rods in reinforced concrete they help to

strengthen this intracellular cement and

so I said that I thought that if

patients were given more ascorbic acid

this would strengthen the normal tissues

and help to bring the malignancy under

control

Cameron rammed a newspaper account of my

talk and wrote to me asking how much

ascorbic acid they ought to be given and

I wrote back saying 10 grams per day he

began cautiously giving 10 grams per day

of ascorbic acid actually sodium

ascorbate at first for 10 for about 10

days intravenously and then

early to these patients and immediately

developed the feeling that this was

beneficial to the patient another

argument had been presented at about the same time by Douglas Reutimann who wrote to Cameron saying that perhaps ascorbic acid units are part of the hyaluronidase inhibitor and perhaps ascorbic acid in large amounts would permit the patient to develop hyaluronidase inhibitor well now of course we feel that there are many ways in which an increased intake of ascorbic acid operates to potentiate the body’s natural protective mechanisms and perhaps these two that I have mentioned are not the most important ones the fact is that it is a matter of observation that patients who receive good intake of ascorbic acid have a much better prognosis than those who receive just the ordinary intake or less than the ordinary one because of course most cancer patients are malnourished anyway with respect not only to ascorbic acid but to other nutrients the reason perhaps I should say why I said 10 grams per day but first let me say that it has been a surprise to me to get involved in cancer research I didn’t intend to do it I was working years ago in the field of immunology for a while and then I had

the idea that there could be diseases it
could be described as molecular diseases
sickle-cell anemia was the first disease
characterized in that way when it was
that the hemoglobin molecules that
patients with this disease manufacture
differ from those manufactured by other
people and we found and other people
that very quickly found a number of
other abnormal human hemoglobin a total
number know is somewhere around 300 the
study of the hemoglobinopathies has
extended very greatly I decided that
after eight years of working on the
hemoglobinopathies to look at other
diseases to see to what extent they were
molecular diseases and I thought they
might as well be it might as well be
some important disease the choice seemed
to me to lie between cancer and mental
illness I decided to study mental
illness rather than cancer with the
argument back in 1953 this was the
argument that almost everybody it works
on cancer practically nobody works on
schizophrenia and other mental diseases
so there wouldn’t be so much competition
in that field and I worked for 10 years

on schizophrenia and at the end of that

period toward the end of that period I

ran across a work by offer and Osmond in

Canada on the treatment of schizophrenic

patients by giving them large doses of

vitamins in particular of nicotinic acid

or nicotinamide I was astonished to read

what these investigators reported they

were giving let’s say 17,000 milligrams

a day of nicotinic acid to schizophrenic

patients whereas 17 milligrams a day is

the amount recommended by the Food and

Nutrition Board of the United States

National Academy of Sciences National

Research Council

prevent pellagra and to keep people in

what the food nutrition board calls

ordinary good health I I call it

ordinary poor health also I found that

Muller had carried out a double-blind

study with schizophrenic patients to see

what the effect of large dose of

ascorbic acid was and he found a

statistically significant effect that a

large intake not very large a couple of

grams per day of ascorbic acid caused

the schizophrenic patients to improve

much more than the controls who received the placebo as I thought about this matter I realized that that one might formulate a general principle which is that there is a concentration of each vital substance that corresponds to the optimum health this is not necessarily the concentration the intake that prevents overt manifestations or deficiency disease it may be very much larger than that in fact there is no reason I think to say that only the vitamins are important as nutrients a vitamin is described as an organic compound that in small amounts is required for life and to good health and in the case of ascorbic acid if we don't get any ascorbic acid we die of scurvy the connective tissue just falls apart because collagen is not being synthesized the joints fall apart and the walls of the blood vessels fall apart you have internal combustion or bleeding all sorts of manifestations ultimately leading to death manifestations of degradation of the connective tissue the collagen well it might be that even without ascorbic acid enough collagen could be

synthesized to keep people from dying

and then the square because it would not

have been called the vitamin and still

the various effects it has could be very

important for good health I don't think

that it is essential that a substance be

a nutrient to be a vitamin in order for

it to have great importance but of

course ascorbic acid is a vitamin and

it's the one that I shall talk about

most today the question comes up why

should I recommend 10 grams a day well

that seemed sensible and safe

recommendation to make you know we can

ask why is it that all plants

manufacture thiamine vitamin b1 and

animals do not manufacture it they

require at exogenously the answer is

that back several hundred million years

ago a plant began running around and

eating the other plants and called

itself an animal the preceding its

immediate ancestors and they manufacture

thiamine and other vitamins and so it

was getting in its food it wasn't like

the red red mold that requires only

biotin exogenously and can synthesize

everything this animal it could

synthesize ascorbic acid and the plants

were making is garbage acid or thiamine

we’re making thiamine you’ve got enough

thiamine and its food well there is a

general basic principle in biology that

if you don’t need a function then the

gene responsible for it it disappears

and the reason for that of course is

that it becomes a burden so when a

mutant arose which no longer

had the genes that synthesized a lot of

them involved 16 perhaps that synthesize

the enzymes that convert other materials

into Simon the pyrimidine half and the

thighs will happen the enzyme that hooks

these two together when the animal a

mutant arose that had shuffled off this

machinery then he was streamlined he was

not burdened the way the wild-type was

and consequently the wild-type died out

and this ancestral animal from then on

he and all of his descendents have

required exogenous thiamine in order to

be in good health and this happened for

riboflavin and for nicotinic acid and

for production and vitamin arey the

other vitamins that all animals require

these substances exogenously this is an

indication to the needs of animals for

these substances are about the same as

for those the needs of the plants but it

didn’t happen for ascorbic acid

practically every animal species as a

very good approximation you can say

every animal species has continued to

manufacture ascorbic acid why didn’t

this ancestral animal give up the

mechanism for manufacturing ascorbic

acid the answer is clear the amount that

the animal was getting in the food was

not enough for good health consequently

and we can perhaps understand that

plants don’t manufacture collagen they

rely on cellulose as the structural high

energy high molecular weight molecule

rather than on collagen so that this may

well be this approps is part of the

process of changing from being a plant

to an animal that you make great use of

collagen and require a larger amounts of

ascorbic acid animals have continued to

manufacture

SCOR McKesson man had a bad accident the precursor of men in fact the common

precursor of all the primates had a bad

accident - bath of living in too good an

environment around 25 million years ago

this environment no doubt was in a

tropical Valley where the food was

especially rich in this garvik acid if

he weighed 70 kilograms or if we convert

to 70 kilograms body weight - there are

foods that for 2,500 kilocalories or

10000 kilojoules of energy food energy

can provide as much as 10 grams of

ascorbic acid per day and this was close

enough to the optimum to permit to the

mutant who had lost one enzyme involved

in the production of ascorbic acid to

shuffle off this to get rid of this

ability and to compete successfully with

a wild-type so that he'd replaced him

and since then all of the primates have

been in a bad way most of them have

restricted their habitats to the

tropical regions were a good bit of

ascorbic acid is available analysis of

the food eaten by a gorilla shows that

he gets about 5 grams of ascorbate per

day who we moved out into temperate and

subarctic regions where the food is not

so rich in ascorbic acid and we have
been suffering of course almost all of
us from hypo a score me Mia ever since
if we look if we ask how much ascorbic
acid do animals manufacture animals over
a 10 million fold range of weight body
weight from the house fly up to the goat
say I don't think anyone has studied the
elephant in this respect we find that
the average amount manufactured by these
animals is about 10 grams per day per 70
kilogram body weight and this is them
one of the reasons for saying that this
is a reasonable amount to try to see to
what extent it will control cancer you
could use much more patients are being
given as much as 100 grams a day and
have taken I think as much as I've heard
as much as 400 grams a day without any
difficulty there are thousands of people
who have taken several grams a day for
years with no overt manifestation of
serious side effects kidney stones and
things like this that are talked about
in the medical literature without any
sound basis for the suggestion but 10
grams a day is an amount that it is easy

to take I mentioned the goat I have but see here in this test tube which essentially full 13 grams of ascorbic acid this is the amount that the goat manufactures each day and I would the goat manufacture this if he didn’t need it I don’t think so this basic general principle would operate if he were to cut down from 13 grams to 12 grams a day he would save 7 percent of the wear and tear and energy required to manufacture ascorbic acid and if there that extra 1 gram were not official why not why shouldn’t he be saving that effort so I think 13 grams a day for a 70 kilogram goat is probably somewhat less well I won’t say probably is somewhat less than the optimum amount and of course he gets a couple of grams a day food too in this other test-tube I have the amount that human being manufactures that’s zero so FAR’s is known no human beings manufactures garbage acid it’s very hard to get back the gene the ability only by transfer of the gene from some other animal other I understand that human chromosome is found in cats of one kind started

European cat and that it’s been
introduced into the complement the
genetic complement of that animal but
it’s hard to get back only
microorganisms can develop and under
special circumstances too can develop
the disabilities in this other test tube
there’s a little bit of white powder
down in the bottom
that’s the forty five milligrams per day
that the food and nutrition board in the
United States recommends for human
beings it’s enough to prevent
essentially all people from getting
scurvy but it is far too small an amount
to put people in good health
I think the goat knows more about these
matters than the food and nutrition
board in fact there’s another Committee
of the National Academy of Sciences
National Research Council that I think
knows more to this is the Committee on
the feeding of laboratory animals they
have made recommendations about monkeys
monkeys are primates like ourselves and
they recommend somewhere a diet with
somewhere around four grams a day per

seventy kilograms of monkey

well now monkeys are expensive and

moreover you may you might sometimes

build up an automatic automated colony

of monkeys would be very expensive and

monkeys themselves you paid a lot for

and you put in a lot of effort to inject

the monkeys and do whatever is involved

in the experiment and then they died on

you that’s a tragedy

so this committee has gone very

carefully into the question of why

amount of ascorbic acid will put the

monkeys in the best of health and I

think I have more confidence in their

conclusion that 4 grams a day per 70

kilogram body weight is better than 45

milligrams a day well if we do take the

proper amount of skarbek acid and

potentiate our natural protective

mechanisms we might well be able to

achieve a considerable control over

cancer I think I might show my slides

and amplify the arguments as we go on

for slide please

here is a curve that I drew showing that

with the this vital substance such as

ascorbic acid your well-being might

increase linearly for small amounts

small increased intakes and reach

optimal functioning at some point

actually experiments with especially the

red red mold have shown that the curves

of this sort have very flat tops Curtin

when you study nutrients or vital

substances such as the vitamins and you

get it’s hard to find just where the

optimum is I have a narrow there the

functioning of the fittest strain this

is corrected for the burden of

manufacturing the material in case that

it is manufactured it is the place where

the slope is just equal except for

change sign to the straight line

presumably straight line that represents

the burden of manufacturing a substance

as a function that the amount

manufactured next slide in the next

slide that I have just the Michaelis

Menten curve say chemical equilibrium a

plus B equals a B which could be enzyme

plus substrate combining to form or the

Apple enzyme plus the co enzyme

combining to form the active

time and if you have a mutant -

everybody is a mutant - the every just

met instead of the hundred thousand

genes that you've inherited from your

parents one has been mutated from that

generation to your generation everyone

has these mutants there may well be

people who manufacture Apple enzymes

with a decreased combination constant

for the coenzyme if the combination

constant is decreased 200 times then you

would could by going to 200 times the

concentration of the coenzyme get the

same amount of combination with at one

time to form the active enzyme well

there are scores of genetic diseases

known that involve an abnormality in the

combination between constant between

Apple and xylem and coenzyme an example

is use methylmalonic acid urea patients

with this disease excrete methylmalonic

acid in the urine because they lack the

enzyme that would I summarize the

methylmalonic acid - 6 Inuk acid which

would then be metabolize and these is

the answer this enzyme uses cobalamin

vitamin b12 as the coenzyme if you give

the patient a thousand times the normal

intake of cobalamin then many of the

patients are put into normal health and
do not show manifestations of the
disease I think that there are with
little doubt thousands of diseases of
this sort each one of which could be
controlled by a great increase in the
intake of a particular vitamin or
other co-enzyme next slide here I
borrowed the slide from Irwin Stone who
around 10 or 15 years ago who was very
concerned about the amount of ascorbic
acid that people needed and about the
prevalence of hypo a scar B Mia
it shows various animals have been
reported as making between 2 and 20
grams of ascorbic acid per day per 70
kilogram body weight next slide here we
have summarize some reasons for a large
intake of ascorbic acid for good health
these animals the average over all
natural plant foods giving the 2,500
kilocalories per day well giving 2,500
kilocalories of food energy is 2 and
3/10 grams and I have an evolution
argument to which I shall go into that
the optimum intake is somewhat greater
than this figure the monkey Chow I have

mentioned dr. you study in guinea pigs

which likely primates have lost the

ability to make ascorbic acid and found

that they were apparently an optimum

health when they got about 3 and a half

grams per 24 70 kilogram body weight

next slide I mentioned that ascorbic

acid does not be required for the

synthesis of collagen for hydroxylation

of the prolyl and lysine residues in the

pro-collagen molecule and it’s involved

in other hydroxylation reactions for 40

years it has been known that a high

intake of ascorbic acid is required for

good healing of the wounds and burns

broken legs fractures periodontal

disease dentists or

in the forefront among medical people in

giving patients large doses of ascorbic

acid to improve their health the next

slide back in 1935 Jung ablute in

Columbia University College of

Physicians and Surgeons reported that

polio myelitis virus is inactivated to

by sodium ascorbate in concentrations it

can be reached in the bloodstream

various other investigators have

reported the same thing I have a next

slide please I was astonished when I

started reading the literature to find

how much there is here are some of the

references not given in detail about to

reported control of viral diseases the

National Cancer Institute is and has

been spending a hundred million dollars

a year for study of viruses in relation

to cancer but zero dollars for an

investigation of ascorbic acid as an

antiviral agent in the next slide and to

the extent that viruses are involved in

human cancer the ascorbic acid may be

operating in the way in this general

antiviral way the work of Morris again

who is the senior surgeon in a hospital

in Fukuoka Japan is interesting

Murata published a paper on yet

Morishita had the idea that the scar

McCasland

would prevent the infectious hepatitis

serum hepatitis from developing in

surgical patients who received multiple

transfusions with a chance that the

viruses in the blood that is infused he

found when he made the study with twelve

hundred and fifty patients that those

who got little or no ascorbic acid

develop

serum hepatitis at the normal what was

the normal rate there of seven percent

but the two grams a day or more is a

hundred percent effective in preventing

serum hepatitis in eleven hundred

patients and now he gives ten grams a

day to all patients in his hospital and

all surgical patients and all patients

in intensive care that he’s in charge of

next slide and he is reported but not

with the statistic says yet that in

these other viral diseases to this high

intake of ascorbic acid is completely is

effective in controlling the viral

diseases next slide antibacterial action

has been reported for many years there

are several mechanisms involved for one

thing it’s been known for forty years

that leukocytes are not effective as

phagocytes unless they have high

concentration today micrograms per

hundred million cells of scar bait a

recent study by human what Hume and

wires in Glasgow 1973

showed that the level was about 25

micrograms per hundred million cells in

the ordinary Scots that they

investigated if they came down with some

illness it dropped to about 10 and this

is not enough to permit the leukocytes

to be effective if I go psych and to

have phagocytic activity 250 milligrams

a day also wasn’t enough 1 gram a day

however did the job next slide please

let’s see I got that him I I put that in

at the last minutes and apparently put

it in reverse but I’ll tell you it’s

upside down to perhaps we should change

that

look at this one at the National Cancer

Institute at the nap I’ll go back to

this Porter

Rodney Porter has reported in his study

of the amino acid composition of

components of complement that c1 Q R and

s are proteins which have collagen like

sequences professor George Fagan in

Stanford University has carried out

these studies the two curves the left to

refer to the c1 esterase component of

complement which consists of these three

proteins Q R and s and as would be

expected the guinea-pigs with a high

intake of ascorbic acid manufacture much

more of this complement of component

than those with a low intake the next

slide here we have studies made in the

National Cancer Institute to reported

last year just an abstract by Jana moto

Creighton and Feniger showing that the

rate of production of new lymphocytes

under antigenic stimulation is greatly

increased in humans who are given five

grams a day there’s about a doubling of

the blast or genesis rate with five

grams a day given in fact only for three

days and this increase continues for

eighteen days they haven’t determined

what it would be for people with a

steady intake of 5 grams per day or 10

grams per day 10 grams a day gives about

a tripling it’s well known that the

prognosis for cancer patients is better

for those who

have a high blaster genesis rate of

lymphocytes under antigenic stimulation

then for those who have a low one and

these investigators said that these

results suggest that ascorbic acid

should be tried in cancer patients they

didn’t know that Cameron had been doing

this for several years next slide please

there’s a good bit of epidemiological

information about ascorbic acid in fact

when studies are made of the diets of

populations in relation to incidents of

cancer of different kinds it is usually

found that the biggest correlation of

all is the inverse correlation with

intake of ascorbic acid I’ve written

down some of the papers mentioned some

of the papers in this field the next

slide there was a study carried out in

California children Breslau with 577

older people starting in 1958 they were

all 50 years or older at that time and

their death rates were followed those

with a higher intake here again the

biggest correlation negative between

death rate and any factor was with the

intake of ascorbic acid even a bigger

effect with cigarette smoking the

subjects who were ingesting the larger

amount of ascorbic acid had only 40% the

age corrected death rate of those was

the smaller amount the larger amount was

only about 125 milligrams a day the

smaller amount 25 milligrams a day we

are checking a population not with an intake between one and two grams a day and in a few years will are already some preliminary results for the first 18 months and that result was only a 30% in fact this population wasn’t restricted to those between 1 and 2 grams contained some with a smaller intake only 30% to the age correct the death rate there was apparently the same decrease in the incidence of heart disease as of cancer and other diseases and these studies I think that it may well be that the age correct a death rate could be reduced to 2 attempts of what it is in the population at present by simply by increasing the intake garvik acid and perhaps other nutrients by a relatively small amount next slide and that would correspond to the increase of 20 years or more in the length of the period their well-being 2 papers have appeared recently on control of polyps the rectum which universally become malignant in the people who have this chronic polyposis and in each case with only 3 grams per day given to the patient so the half of them showed the disappearance of the polyps instead of

having 40 of them they drop to 0 or to

the next slide here we have the first to

report by Cameron on the first 50 cases

of patients with terminal cancer

advanced terminal cancer who called

untreatable cancer in Scotland the

statement is made that in 4 cases the

treatment with ascorbic acid was harmful

as I’ve looked over the data and the

case histories I concluded that this

probably is not correct because these

patients the population of 50 or

population of a hundred including those

50 died off during the first few days

for the first few weeks at the low

rate than the control population there

was really no increased death rate in

this first 50 the fact that these

patients died during the first two weeks

four of them

I think indicated to Cameron and

Campbell that the ascorbate was harmful

in all of the other cases there was this

benefit and the benefit was sometimes

rather small amount decrease in pain

permitting the patients to be taken off

narcotic drugs or general disappearance

of cachexia and anorexia patients felt

well and had good appetites began to eat

well went back to work and some of them

have continued to live the next slide

far longer than expected one patient had

showed an unusual course such as to

permit him to be described in a separate

publication he had the reticulum cell

sarcoma

well diagnosed by biopsy and x-ray

diagrams showed that this disease was

there when he received 10 grams so they

have a scar bait he improved very

rapidly as shown by these measures of

illness a decreased sedimentation rate

of red cells was observed and

glycosaminoglycans serum serum you cried

decreased rapidly after six months his

physician took him off the vitamin C 10

grams a day with the argument that he

was cured no signs of disease anymore so

he shouldn’t continue taking the drug

well of course vitamin C isn’t a drug

there’s a food and he was taking the

amount that probably is just appropriate

to human beings if they were

manufacturing it themselves the amount

they would manufacture he took him off

the vitamin C and within a month he was

back in the hospital the cancer returned

it didn’t respond to ten gram

per day orally when it was resumed for a

couple of weeks but he was given 20

grams a day for 10 days intravenously

and immediately improved in health and

he has lived now for several years

getting 12 and a half grams a day orally

and driving his lorry back and forth

apparently in perfect health well as

good health perhaps even better than you

expect for people 50 years old living in

Scotland the next slide shows the

results of the study of 1,100 patients

with terminal cancer

100 of whom received 10 grams of a spar

bait

per day beginning on the day that they

were pronounced untreatable this may

occur at laparotomy when the cancer is

observed to be of such a nature that it

is inoperable or later after high-energy

radiation treatment or cytotoxic drugs

have labs to have been tried and perhaps

had some temporary value but are no

longer effective the matched controls 10
matched controls for each of the hundred
scar bait treated patients had the same
kind of cancer and the survival times
are measured again from the time when
they were considered untreatable the 50
times the fraction of the ascorbate
treated patients lived more than a year
the 16 out of a hundred of the ascorbate
treated patients are alive after several
years as much as over 5 under half years
now the average survival time now is
more than five times the every survival
time of the 100
controls the thousand controls the
thousand controls have all died by this
time with only 15 out of a thousand
living more than one year
no only yes I think 15 is right only
three three lived more than 400 300
thousand lived more than a year it’s
marked as 400 days there now several
hundred patients with cancer are
receiving 10 grams per day in Vale of
Leven Hospital in Scotland and they
begin to receive it too immediately that
they come to the hospital no matter what
the stage of development of the disease

is I could go on and mention some individual cases not only in Scotland but also in California but this is the only quantitative material that I have I think that every cancer patient should be put on ascorbic acid therapy what the relation is to the cytotoxic drugs has not yet been carefully studied in California patients who are receiving 5-fluorouracil or methotrexate or other cytotoxic drugs have been given ascorbic acid also 10 grams a day and one observation has been made in practically every case the serious side effects of loss of hair and nausea other side effects of the cytotoxic drugs do not show up when vitamin C is given on the other hand may be that these two treatments operate against one another the cytotoxic drugs have the side effect of destroying the body’s natural protective mechanisms and the vitamin C operates by potentiating the body’s natural protective mechanisms if you knock out the immune system down to zero tenfold or a hundredfold potentiation still leaves it at zero in the course of time it will be possible

to say what should be done when the

Trice arises between taking cytotoxic

drugs or taking vitamin C but there is

reason to believe that whether or not to

these other treatments are used the

vitamin C should be taken well this is a

situation now I haven’t found anything

and the cancer literature during the

last 20 years that is comparable to this

to what extent that will stand up

whether you can have a five-fold

increase in life expectancy for people

at the beginning stages of cancer who

might have a five year life expectancy

that would be increased to 25 years with

a scar bait or not I don’t know

I do feel strongly that cancer and those

garvik acid are closely related it may

be that cancer is in large part one of

the manifestations of vitamin C

deficiency that people develop cancer

because they are in poor health because

of the extremely small amount of

ascorbic acid that they ingest of course

I have read statements that chemicals

which have been introduced into our

environment in our food and into the

environment generally are responsible

for a large fraction of the cases of

cancer that developed ascorbic acid is

known to be a detoxifying agent for

almost all substances and

perhaps it can work it does work as a

prophylactic agent by helping to

counteract the effect of these cancer or

genic substances I think about this

opportunity of helping to control cancer

by the use of the proper amount of

ascorbic acid both prophylactically and

people who have not yet developed cancer

and therapeutically and those who have

is so important that it should not be

neglected by anyone thank you

[Applause]

Linus Pauling Protocol For Heart Disease.
Linus Pauling Therapy For Heart Disease.
Linus Pauling Protocol / Dr Matthias Rath / Pauling-Rath Lysine - Dr. Linus Pauling Heart Protocol , Lysine Dosage, with Dr Matthias Rath .

BBC Television Heretic Program on Linus Pauling and Vitamin C

in a remote spot on the coast of

california lives a man who’s been

acclaimed as one of the greatest

scientists this century

his name linus pauling

today at the age of 93 when he might

have expected affectionate reverence

he’s an exile from the world of science

and yet to the public he’s a hero

the guru of vitamin c

i have a message for linus

pauling

thank you very much for vitamin c

i’m going to do my best to remember to

take it every day

and if you can invent

something else i’m sure it would make a

big difference in our world as well

god love you and keep up the good work

don’t stop get it out there so everybody

knows about this stuff believe me you’re

on the right track

but for most scientists vitamin c is the

lunacy of a once great man

i think history will judge linus pauling

as a brilliant chemist

who won

a

chemistry nobel prize in 1954

and a nobel peace prize in 1962

and then went completely wacko

pauling’s heresy has been to advocate

taking large doses of neat vitamin c for

optimum health

every day for over a decade he himself

has ingested 18 grams of vitamin c

that’s over 500 times the recommended

daily intake and the equivalent of

eating 200 oranges

but is this just the harmless

eccentricity of a mad old scientist

for example if we consider a helium atom

with the nuclear charge was once

america’s most illustrious professor of

chemistry

he made some revolutionary discoveries

about the way atoms combine into

different molecules

and his book the nature of the chemical

bond is considered as important to

modern science as einstein’s theory of

relativity

indeed linus pauling has been called the

father of modern chemistry

he received his first nobel prize 40

years ago

unlike most prize winners he got it not

for one discovery but for a whole life’s

work

he was only 53

but the moment he’d become a pinnacle of the scientific establishment he set

about challenging it together in the

firm determination to rid the world of

war then we are going to succeed we can

succeed at the time almost all

scientists supported nuclear weapons

pauling led one of the first campaigns

against

lives in the them of your children and

grandchildren and great grandchildren

too so let’s take action let’s march in

peace marches pray in vigils beat the

drums

then even if we are vaporized atomized

hiroshima we’ll know that we have done

our duty as thoughtful sane and high

principles

he and his wife arva helen managed to

persuade thousands of scientists to back

a ban on nuclear tests in the atmosphere

to ask the governments and peoples of

the world to stop

there was much opposition

but he withstood it for example ever

taking any part uh in anything towards

the defense of american communist spies

one of the reasons that i’m interested

in peace is that i’m not talking about

peace individual human beings you in the

past have always rather mouthed the

communist point of view i deny that i’ve

mouthed the communist point of view i

challenge you to prove

the campaign worked in 1963 a test ban

treaty was signed for which pauling got

the credit and another nobel prize for

peace

so by his early 60s pauling was a world

figure facing a gloried future

but within a few years he had begun a

second crusade for vitamin c

it was an even more direct confrontation

with established science

his championing of vitamin c was almost

messianic he was to call it the most

important substance in the world

pauline biographer anthony serafini

there’s a question

as to why pauling at the height of his

career would go and risk his career his

public image or at least his scientific

image on something which he has to know

is going to be a huge uphill battle to

say the least

i think there are a few things

pauling enjoys being a gadfly i think

pauling simply enjoys stirring up

controversy he enjoys getting people

angry he enjoys a good fight

uh it’s and he’s a man of tremendous ego

i think vitamin c was a chance for

pauling to become the savior of the

world i think he perceived that as the

ultimate capstone of his career

he got the idea virtually overnight and

the idea popped in his head

and pauling gets his scientific ideas

almost literally in a flash

uh when he was working on the

development of proteins the study of the

alpha helix

he got that in the flesh um

all of his ideas come to him like that

and if they’re controversial ideas so

much better

but pauling remembers the beginning of

his vitamin c heresy occurring when at

the height of his fame he once talked

about the prospect of old age i was

asked to give a lecture

in the course of which i said that i

enjoyed so much learning about

discoveries that scientists continued to make about the nature of the world

that i hoped that i could live another

25 years

the biochemist erwin stone

wrote to me saying that if i were to

follow the regimen that he recommended

of taking high doses of vitamin c

then i could he thought live not only 25

years more but even 50 years more

school

so pauline and his wife both tried the

vitamin c elixir do you like this as

well as the orange juice no

and lo and behold they found an almost

immediate benefit

my wife and i both found that we could

control the common cold

by taking our three grams a day of

vitamin c

later i increased it to six grams a day

a hundred times rda recommended dietary

allowance

then to 12 grams and then now for a

number of years to 18

grams a day

pauling’s belief in the power of vitamin

c was initially bolstered by his

discovery that in the days before drug

remedies a few doctors had in fact

tested vitamin c against colds with some

limited success

he rapidly brought out a book extolling

high doses of vitamin c as the way to

prevent colds it was a best seller and

sales of vitamin c soared

pauling’s endorsement created scores of

new high-dose vitamin c products some

openly acknowledging his name

convinced he had discovered a new cure

pauline awaited the plaudits i thought

the medical profession would be pleased

then that they would be no longer

bothered by patients with the common

cold for which they didn’t have any very

good

treatment anyway

but could concentrate on more serious

illnesses so i was astonished at the

reception that i got

far from welcoming pauling’s theory

doctors rounded on him the attack was

launched from harvard by professor

frederic stare

professor pauling is a great chemist and

a great american but when you come to

questions of health he’s not a physician

he’s not a nutritionist and i don’t

think he really knows much about what

he’s talking or writing about

in the area of nutrition

and at harvard’s among dr stair’s

project in the 1940s stare had been part

of a movement to put nutrition on a

sound scientific basis

the vitamins had only recently been

discovered and doctors wanted to work

out exactly how much of each vitamin

people actually needed to avoid

deficiency diseases

in the case of vitamin c it was known

that a lack of it caused the disease

scurvy

so the nutritionist recommended a daily

intake of between 30 and 60 milligrams

more than enough to prevent scurvy

but no serious effort was made to see if

pauling’s whole gram amounts might

prevent any other diseases partly

because people couldn’t get anything

like that much vitamin c from a normal

diet

vitamin c is a very important substance

in the body

we get enough of it in our usual diet if

we have some fruits and vegetables the

exact amount we need is probably in the

range of

30 40 50 60 milligrams

pauling’s heresy was to question the

whole philosophy behind the recommended

daily amounts which the experts said

were all that anyone really needed it

depends upon what you mean by need

that if you are satisfied to stay alive

then for most people the rda of 60

milligrams a day

is

enough to achieve that result

but

if by need

you mean

uh to

be in the best of health

then much more

is required

the evidence that finally convinced

pauling he was right came from animals

all animals need vitamin c but most of

them get it only indirectly from food

they make it for themselves within the

body

but three species can’t manufacture

their own vitamin c

guinea pigs primates and man

so in zoos huge amounts of fruits and

vegetables are fed to guinea pigs and

primates

in fact pauling discovered that vets

recommend far higher intakes of vitamin

c for monkeys than doctors do for people

extrapolating to humans pauling advised

taking a minimum of six grams a day

200 times what’s officially recommended

now pauling stuck his neck out even

further

he started saying that vitamin c might

prevent not just colds but all manner of

diseases as more critics rounded on him

he almost relished the inevitable charge

of quackery

at the authorities say that if someone

tells you that he knows something that

would be good for you no matter what’s

wrong with you

then that shows that he’s a quack

he has a nostrum that’s valuable against

any

illness

but i contend that high doses of vitamin

c are valuable for people no matter what

is wrong with them because

they

the vitamin c in large amounts bolsters

up the body’s natural protective

mechanisms that have value in protecting

against all sorts of diseases and

conditions

[Music]

pulling his next vitamin c bomb was

dropped in medicine’s most sacrosanct

area cancer

he wrote a book based on the medical

records of cancer patients who’d been

given high doses of vitamin c by a

scottish surgeon dr ewan cameron

cameron and pauline claimed vitamin c

both prevented cancer and prolonged the

lives of people who already got it

pauling took the data right to the top

to the u.s government’s national cancer

institute where he had a meeting with

some of the country’s leading cancer

physicians

he was rebuffed

their response was that they would not

do anything

about it

see this is a different attitude

from the attitude of a scientist a

scientist is always always looking for a

hint of something new that might lead to

a new discovery

with physicians it seems to me

you have to force the new discovery

down their throats

after all

i’ve made

a good many

discoveries in my life i’ve turned out

to be right a good fraction of the time

and i’m probably right about vitamin c

pauline’s persistence paid off the

world-famous mayo clinic agreed to test

vitamin c

658 calcified granuloma

here were some of america’s leading

specialists in conventional cancer

treatments

the clinic did two separate vitamin c

trials on their cancer patients testing

the high doses recommended by cameron

and paulink

the investigations were led by dr

charles mattel a known critic of

unconventional medicine

he reported that vitamin c was of no

benefit at all

but poorly noticed that the mayo clinic

hadn’t quite given dr cameron’s full

vitamin c treatment he accused them of

fraud

dr cameron gave

10 grams of vitamin c to his patients

with advanced cancer

every day for the rest of their lives

whereas in the mayo clinic study it was

stopped after 75 days

no mention is made of this basic fact so

it seems to me that this is fraught

pauling wrote several furious letters to

mattel who never replied

finally he wrote to the editor of the

journal that had published the trials

claiming they were a fraud and a

conspiracy again he was rebuffed

professor pauling he assumed that

the journal and uh

dr mertel and his colleagues were

somehow involved in some kind of

chicanery

for which there wasn’t really a

persuasive shred of evidence and so we

chose to ignore it

pauling despite his name was able to be

written off as a heretical has been

that’s not an unusual phenomenon in

science when great scientists

move into areas where they don’t have

expertise and they assume that the same

brilliance and intuition that allow them

to hit the bull’s eye

in their own field

will serve them well in a new field

and they become impatient with the

evidence

the evidence should catch up with them

they’re ahead of the evidence

well

it it’s very hard to run ahead of the

evidence in clinical research and it’s

very easy particularly in cancer

research

to go astray

ten years ago pauling’s vitamin c

crusade seemed to have found it

partly it was said because of his own

intemperate unscientific campaigning

style

in many ways he was his own worst enemy

i think the fatal mistake

as far as acceptance by the medical

community

uh was

were his earlier claims that vitamin c

can he has said at certain points of

vitamin c will cure as many as

uh 75 of all cancers well people hear

something like that the medical

community hears something like that and

they say

well that’s got to be ridiculous and

that’s got to be very easy to refute i

think the only truth behind the claim

that the mayo clinic studies were a

conspiracy

is that the medical community uniformly

rejects what he says

uh i i don’t think it’s a conspiracy in

the sense that they met in hotels in the

late evening or something to say well

what is going to be our next move

against pauling i just think they find

they regard him as a nuisance and um

they share the same opinions and they go

after him

better bring get the vitamin c there

pauling’s faith in vitamin c wasn’t

shaken

even when his wife who like him had been

taking huge doses of the stuff began to

fall ill

victor herbert

when i first heard linus pauling

promoting vitamin c against the cold and

everything else i laughed

but then when he and i appeared on

radio in new york city and i noticed

that his wife had lost a lot of weight

and i said to him linus i think you

ought to

take your wife to a doctor because she’s

lost a lot of weight she may have

something seriously wrong with her like

cancer

leina said

no problem victor i’m giving her mega

doses of c she’s going to be fine

well she went on and died within two

years of cancer

and pauling received a second blow

soon after his wife’s death his

colleague dr cameron despite vitamin c

also died of cancer
and yet today alone in 93 pauling
continues his vitamin c crusade unbowed
and undaunted
once a week he leaves his remote pacific
ocean home and is driven nearly 200
miles to his very own research
laboratory near san francisco
a modest enough building the linus
pauling institute is where his vitamin c
gospel has been conceived and preached
for the last 20 years
it has half a dozen separate
laboratories and up to 40 scientific
staff all seeking to discover yet more
properties of vitamin c
good morning good
pauling's morning has been maintained
largely by private benefactors inspired
by the cause and the name
donations average about three million
dollars a year i thank you very much for
your fine contribution to the support of
our work period also comma i am closed
some of our recent papers on vitamin c
and heart disease period the cure of
heart disease is his latest crusade
assisting him dr matthias ruth a german

biochemist who took a huge risk in doing

so

my decision to join linus pauling was

noticed with

this favor

from all my peers in germany

i wouldn’t say they put pressure on me

but they said how can you join that

maverick

why did you do that you’re threatening

your own career by doing that

now the molecular mass

values

they seem to be too small

in germany rath had been researching

cholesterol and heart disease and had

seen a link with vitamin c

pauling was one of the few to listen

that we just exposed

paulinen wrath tested the new theory on

guinea pigs

to induce cholesterol in their arteries

they’re all fed a very high fat diet but

some got high doses of vitamin c as well

under the microscope rath compared the

animal’s arteries as expected the high

fat diet had produced large deposits of

cholesterol

but he found less cholesterol in the

animals on the extra vitamin c

wrath and pauling said they discovered

the true cause of heart attacks what we

are saying

is that heart disease

is nothing else than the form of

pre-scurvy that can be

prevented and treated

by significantly increased amount of

vitamin c in the diet

as a result of our experimental work

done in the laboratory

i am strongly of the opinion that

we can eliminate heart disease as a

major cause of premature disability and

death by taking

the optimum amounts of vitamin c every

day

another staggering claim that seems to

run far ahead of the evidence in the

eyes of many pauling has finally flipped

i think most of us who have observed

what pauling has done with vitamin c

are filled with regret

we’re saddened by the fact that this is

a great man

who

recently is making major claims

that are of great importance to the

public

but is not willing to play by the rules

my perception and you know this could

easily be wrong is that linus is

suffering from something called senile

megalomania which some other nobel prize

winners developed as they got older

where they get an obsessive belief

that they can’t say anything wrong if

they believe it it’s got to be true

but now at the very universities that

once criticized polling vitamin c is

being dusted off the shelf

some younger research scientists have

begun to take another look at the

substance that’s officially meant only

to prevent scurvy

and they found it has a particular

chemical property that might help

prevent some diseases dr ball’s fry

there has been a growing interest in

vitamin c over the last decade

mainly because

many degenerative diseases have been

found to be associated with

what’s called oxidation

and it is clear that vitamin c can very

effectively prevent many of these

oxidation processes because it is a very

strong antioxidant

antioxidants are the latest consumer

health boom

in america sales of vitamin c are rising

and the public who are once derided for

following pauling are now the object of

scientific study

[Music]

in los angeles a team headed by dr james

enstrom has been investigating the

vitamin c intake of a large

cross-section of americans

and they found that people who ingest

around 10 times more vitamin c than the

experts say is all we need have less

heart disease and live up to six years

longer than people following the

official guidelines

and professor of nutrition gladys block

says that in the last decade over 40

studies show that people with diets rich

in vitamin c have a lower risk of cancer

there’s just been an explosion of

research on vitamin c as well as other

antioxidants

and partly attributable i suspect to

pauling’s advocacy of vitamin c

and

there’s been a growing recognition among

scientists among epidemiologists and

among nutritionists that

antioxidants are important vitamin c is

important

in a lot of chronic diseases like cancer

as pauling had suggested

now a number of scientific trials are

testing the polling philosophy and

evidence is emerging that high doses of

some vitamins including sea may help

stave off disease in the elderly

it seems ironic that the work that linus

pauling had done and the theories that

he originally proposed a few decades ago

which were considered to be heresy at

the time are now in fact achieving a

great deal of respect and repute that

it looks like he was right

dr elina’s

lately pauling has been brought out of

exile to talk to a less hostile medical

profession

well

i started taking three grams of vitamin

c

in

1966 i guess and then went up to 12

grams but many scientists remain to be

fully convinced in part because pauling

himself so habitually jumped the gun

with the evidence

even now back at the laboratory he’s

preparing another confrontation with the

establishment

his staff are now claiming vitamin c may

help in

aids it’s pauling’s most ambitious bid

to save the world and once again take

the flack but he also hopes the credit

for being ahead of the game

i think it’s going to turn out

that the general opinion will be

in

perhaps pretty quickly in 10 years or 20

years

the one

that

the

distinguished biologist renee dubose

expressed he said dr pauling works in

the conventional

fields of science

but he is 20 years ahead of everybody

else

heretics are absolutely necessary in

science

i think it’s no exaggeration to say that

virtually all of the major breakthroughs

that have occurred in the history of

science

have occurred

through heretics and have started off as

heresies

most of the progress in science requires

a willingness to be wrong

somebody has to risk

being ostracized

by the scientific community to advance

science and i think that’s pauling’s

legacy

that he was willing to take that risk

and i think that’s very much part of

what makes bowling a very great

scientist

pauline knows that vitamin c won’t make

him live forever

but he feels that of all his scientific

work it’s his heresy that will be most

famously immortal

many scientists will remember me as one

of the founders of molecular biology of

course and chemists in general will

remember me as

one of the founders of modern chemistry

but also what i’ll be remembered for

is probably that i

am the vitamin c man and

as having least in part responsibility

for the revolution in medicine

in which

there was a great improvement in human

health and in the control of disease

through the use of vitamin c and other

vitamins

and this will include my

opponents

although the opponents may have died off

by that time

[Music]

heritage

[Music]

you